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TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1887.

No. 109.

LOUIS DRYFOOS, APPELLANT,

vs.

WILLIAM WIESE.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

FILED OCTOBER 16, 1884.

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1 The President of the United States of America to William Wiese, Greeting:

You are hereby commanded that you personally appear before the judges of the circuit court of the United States of America for the southern district of New York, in the second circuit court, in equity, on the first Monday of June, A. D., 1880, wherever the said court shall then be, to answer a bill of complaint exhibited against you in the said court by Louis Dryfoos, and do further and receive what the said court shall have considered in that behalf; and this you are not to omit under the penalty on you of two hundred and fifty dollars.

Witness Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, at the city of New York, on the 10th day of May, in the year one thousand eight hundred and eighty, and of the Independence of the United States of America, the one hundred and fourth.

JOHN I. DAVENPORT, *Clerk.*

WETMORE & JENNER,
Comp'lt's Sol'rs.

The defendant is required to enter appearance in the above cause in the clerk's office of this court on or before the first Monday of June, 1880, or the bill will be taken *pro confesso* against him.

J. I. D., *Clerk.*

2 (Endorsed.)

I hereby certify that on the 12th day of May 1880, at the city of New York, in my district, I personally served the within-named William Wiese by exhibiting to him the within original and at the same time leaving with him a copy thereof.

Dated May 13th, 1880.

LOUIS F. PAYN,
U. S. Marshal, S. D. N. Y.

[Endorsed:] U. S. circuit court. Filed May 18, 1880. John I. Davenport, clerk.

3 United States Circuit Court, Southern District of New York.
In Equity.

LOUIS DRYFOOS, Complainant,
against
WILLIAM WIESE, Defendant.

To the honorable the judges of said court:

Louis Dryfoos, a citizen of the State of New York, brings this bill of complaint against William Wiese, of the city of New York.

And thereupon your orator complains and says that heretofore, and before the 1st day of May, 1877, one August Beck, of the said city of New York, was the original and first inventor of a new and useful quilting-machine, which had not been known or used by

others before the invention thereof by him, and not for more than two years prior to his application for a patent therefor, in public use or on sale in the United States; and that prior to the issuing of the letters patent hereinafter mentioned the said August
4 Beck, by an assignment, duly signed, sealed, and delivered,
and recorded in the Patent Office of the United States, assigned all his right, title, and interest in and to said invention to your orator and Joseph Dryfoos, and requested that the said patent might issue to your orator and Joseph Dryfoos, as assignees, as by reference to said assignment or a duly certified copy of the record thereof will more fully and at large appear.

And that the said August Beck, being so as aforesaid the original and first inventor of the said quilting-machine and being also a citizen of the United States, made application in due form of the law to the Commissioner of Patents of the United States for letters patent therefor, to be issued to your orator and said Joseph Dryfoos, as said assignees, and complied in all respects with the requirements of law in that behalf; and that thereupon, and after due proceedings had, the said Commissioner of Patents caused letters patent to be made out in the name of the United States of America, in due form of law, and bearing date the said 1st day of May, 1877, being signed by the Secretary of the Interior and countersigned and sealed with the seal of the Patent Office by the said Commissioner of Patents, whereby there was granted and secured to your orator and the said Joseph Dryfoos, for the term of seventeen years from the date thereof, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention and the said letters patent, having been duly recorded, were issued and delivered to your orator and the said Joseph Dryfoos, and that thereafter and about December 26, 1877, the said Joseph Dryfoos, by assignment duly signed, sealed, delivered, and recorded, assigned all his right, title, and interest in said invention and letters patent to your orator.

And your orator further shows that thereafter and on or about the 29th day of March, 1878, your orator, finding that the said
5 letters patent were inoperative by reason of a defective or in-
sufficient specification, and the said error having arisen from inadvertence, accident, and mistake, and without any fraudulent or deceptive intention on the part of said Beck or of your orator, your orator surrendered the said patent to the Commissioner of Patents, and your orator and the said Beck having in all respects complied with the provisions of law in that behalf, and having amended the specification of said letters patent in accordance with the decision of the Commissioner of Patents, such proceedings were thereupon had in accordance with the statute of the United States in such case made and provided that reissued letters patent for the same invention were, on the said 29th day of January, 1878, issued and delivered to your orator as assignee, by mesne assignments, from the said Beck, which said reissued letters patent bore date the said 29th day of January, 1878, and granted and secured to your orator for the then unexpired term of said original letters patent the full and

exclusive right and privilege of making, selling, using and vending to others to be used, the said invention.

And your orator further shows that thereafter, and on or about the 24th day of February, 1880, your orator, finding that the said reissued letters patent were inoperative by reason of a defective or insufficient specification, and the said error having arisen from inadvertence, accident, and mistake, and without any fraudulent or deceptive intention on the part of said Beck or of your orator, your orator surrendered the said letters patent to the Commissioner of Patents, and your orator and the said Beck having in all respects complied with the provisions of a law in that behalf, and having amended the specification of said letters patent in accordance with the decision of the Commissioner of Patents, such proceedings were thereupon had, in accordance with the statute of the United States in such case made and provided, that reissued letters patent for the same invention, having date the said 24th day of February, 1880, and numbered reissue number 9097, signed by the Secretary of the
6 Interior, and countersigned and sealed with the seal of the Patent Office by the Commissioner of Patents, were on the said day issued and delivered to your orator, as assignee by mesne assignments, from the said Beck, whereby there was granted and secured to your orator for the unexpired term of seventeen years from the said first day of May, 1877, the full and exclusive right and privilege of making, selling, using, and vending to others to be used, the said invention, as by reference to said reissued letters patent, or a duly certified copy thereof in court to be produced, will more fully and at large appear.

And your orator further shows that he has, ever since the date of said assignment to him, been and now is entitled to all the rights, interests, and privileges thereby secured to him in and to the said invention in said letters patent particularly set forth, and is now and ever since the date thereof has been the owner of said reissued letters patent No. 9097, and entitled to all the exclusive privileges thereby granted and secured.

And your orator further shows that the said invention is of very great utility and has been constantly used by your orator since the grant of the said letters patent therefor, and your orator would, but for the wrongful acts of the defendant and others acting in concert with him, have made large gains, profits, and advantages from the manufacture, use, and sale of the said invention, but by reason of said wrongful acts has been prevented and hindered from so doing.

And your orator further shows, on information and belief, that the said defendant, well knowing the premises and the rights and privileges granted and secured to your orator as aforesaid, but contriving to injure your orator and to deprive him of the profits, benefits, and advantages which might and otherwise would have accrued to him, at the city of New York, and without the license or
7 permission but against the will of your orator, has unlawfully and wrongfully caused to be made and used and is now using quilting-machines embracing and containing the said invention as especially set forth and specified in the first claim of the specifica-

tion annexed to said reissued letters patent and made in accordance therewith, which said unlawful making and use by said defendant as aforesaid is in violation and infringement of said before-recited reissued letters patent and your orator's said exclusive rights and privileges under the same, and that the said defendant has derived and received, and is still deriving and receiving, from such unlawful making and use great gains and profits, but to what amount your orator is ignorant, and prays that said defendant may be required to make full disclosure of all such gains and profits.

And your orator further shows that the defendant, though requested to desist from such unlawful making and use and to pay to your orator such gains and profits as the said defendant has actually made, has refused and still refuses so to do, by means whereof, and of the aforesaid acts and doings of the defendant, your orator is greatly injured and is deprived and prevented from receiving the gains and profits to which he is lawfully entitled from the exclusive rights and privileges so granted, secured, and conveyed unto him as aforesaid, and which he would derive and acquire but for the said unlawful acts of the said defendant, and has been damaged in a large sum, which said actings and doings of the said defendant are contrary to equity and good conscience and tend to the manifest injury of your orator in the premises.

In consideration whereof, and forasmuch as your orator can only have adequate relief in this honorable court, where matters and things of this sort are made cognizable by statute, to the end, therefore, that said defendant may, if he can, show cause why your orator
should not have the relief hereby prayed, and may, upon his
8 corporal oath and according to the best and utmost of his
knowledge, remembrance, information, and belief, full, true,
direct, and perfect answers make to the matters and things hereinbefore stated and charged;

And that defendant may fully answer the premises, and that he may be decreed to account with and pay over to your orator the profits which he has realized, as well as the damages suffered by your orator, from or by reason of such unlawful making and use of said invention, and that the said damages may be duly assessed by or under the direction of this court—

May it please your honors, the premises considered, to grant unto your orator the writ of injunction issuing out of and under the seal of this honorable court, or issued by one of your honors, according to the form of the statute in such case made and provided, enjoining and restraining the said defendant, his attorneys, clerks, servants, agents, and workmen, from making and using, or causing to be made or used, any machines constructed substantially according to the invention secured by the before-recited reissued letters patent No. 9097 and described in the said first claim of the specification thereof.

And also that the writ of preliminary or provisional injunction may issue so restraining the said defendant, his agents or employees, pending this suit; and that the said defendant may be decreed to pay the costs of this suit; and that your orator may have such other and further relief as the equity of the case may require and as to your honors may seem just.

And may it please your honors to grant unto your orator, not only the writs of injunction conformable to the prayer of this bill, but also the writ of subpœna *ad respondendum*, directed to the said defendant, commanding him on a certain day therein to be named to be and appear in this honorable court and make answer unto this bill of complaint, and do, perform, and abide such
9 further order, direction, and decree as may be made against him.

And your orator will ever pray, &c.

LOUIS DRYFOOS.

WETMORE & JENNER,
Complainant's Solicitors.
EDMUND WETMORE, *Of Counsel.*

UNITED STATES OF AMERICA,
Southern District of New York, } *ss:*

Louis Dryfoos, being duly sworn, says that he is the complainant above named, and that the foregoing bill of complaint by him subscribed is true of his own knowledge, except as to the matters therein stated on information and belief, and that as to those matters he believes it to be true.

LOUIS DRYFOOS.

Sworn and subscribed before me this 10th day of May, 1880.
[L. S.] JOHN H. IVES,
Notary Public, Kings Co.

Cert. filed in N. Y. Co.

(Endorsed:) U. S. circuit court, southern dist. of New York. Louis Dryfoos ag'st William Wiese. Bill of complaint. Wetmore & Jenner, compl't's solicitors, 11 Pine St., N. Y. U. S. circuit court. Filed May 10, 1880. John I. Davenport, clerk.

10 United States Circuit Court, Southern District of New York.
In Equity.

LOUIS DRYFOOS *vs.* WILLIAM WIESE.

The clerk of this court will please enter my appearance as solicitor for the defendant in the above-entitled suit.

Yours, &c., &c.,

GILBERT M. PLYMPTON,
245 *Broadway, New York City.*

Dated N. Y., June 7, 1880.

To John I. Davenport, Esq., clerk U. S. circuit court, New York city.

(Endorsed:) U. S. circuit court, south. dist. of N. Y. Louis Dryfoos *vs.* William Wiese. Appearance. Gilbert M. Plympton, sol'r for def't & of counsel, 245 Broadway, N. Y. U. S. circuit
11 court. Filed June 7, 1880. John I. Davenport, clerk.

12 United States Circuit Court, Southern District of New York. In Equity.

Louis Dryfoos *vs.* William Wiese.

The answer of William Wiese, defendant, to the bill of complaint of the said complainant.

The said defendant, reserving to himself all benefit of exception to the errors and insufficiencies of the said bill of complaint, for answer thereunto, or to such parts thereof as the said defendant is advised is material for him to make answer unto, answering, says—

That the defendant has no knowledge or information regarding the alleged invention of August Beck mentioned in said bill of a quilting-machine, or of his assignment of said alleged invention to the orator and Joseph Dryfoos, or of said Beck's application for letters patent therefor, or of the issue of letters patent therefor to the orator and said Joseph Dryfoos, or of the assignment by said Joseph Dryfoos to the orator, as is alleged in the said bill of complaint, except such knowledge and information as the defendant has obtained from the complainant's said bill of complaint, and therefore he leaves the complainant to make such proof thereof as he may be advised is necessary.

13 And the defendant, further answering, says that he has no knowledge or information regarding the reissue of the aforesaid letters patent on the 29th day of January, 1878, nor regarding the surrender of said reissued letters patent by said complainant or the reissue of said letters patent on the 24th day of February, 1880, to the complainant as assignee by mesne assignments from said Beck, as is stated in the complainant's said bill of complaint, except such knowledge as the defendant has obtained from the said bill, and therefore he leaves the complainant to make such proof thereof as he may be advised is necessary; but this defendant denies that the said reissued letters patent dated January 29, 1878, were surrendered for good and lawful cause or were inoperative by reason of a defective or insufficient specification arising from inadvertance, accident, or mistake and without any fraudulent or deceptive intentions on the part of the said Beck or the orator, or that the specfication of said reissued letters patent dated January 29, 1878, was duly and properly amended; and this defendant, on information and belief, avers that said surrender, as well as the procurement of said reissue dated February 24, 1880, was fraudulent and for the purpose only of covering inventions and things not made by the said Beck.

And the defendant, further answering on information and belief, says that said reissued letters patent numbered 9097 and dated February 24, 1880, are broader than the alleged invention of the said Beck and cover more than was described or made known in the said original patent, or in the application therefor, and more than was represented in the model deposited in the Patent Office on the application for said original patent, and that said reissue is not for the same invention as was said original patent; and this defendant

further says, on information and belief, that said reissued patent dated February 24, 1880, is obscure and ambiguous, and that the description therein does not sufficiently describe the things covered by the claims thereof so as to enable one skilled in the art to which they relate to construct the machine purporting to be described in and secured by said reissue, and that the alleged improvements described in the specification of said reissue dated February 24, 1880, did not involve or require invention at the time of their pretended invention by said Beck, but the same were obvious and the
14 said Beck did not invent them or any of them, and that said
reissued letters patent dated February 24, 1880, and numbered 9097 are therefore void.

And this defendant, further answering, denies, on information and belief, that the complainant is or has been entitled to any legal rights under the said reissued patent No. 9097, or that said invention is of any great utility, as alleged by him, and the defendant is not informed, save by said bill of complaint, whether the said pretended invention has been used by the orator as therein alleged.

And this defendant, further answering, says, on information and belief, that the said alleged invention patented in and by said original patent and the reissues thereof, and substantial and material parts thereof claimed as new, had been openly and publicly made, used, and sold by the said Beck and by others with his knowledge, consent, and allowance for more than two years prior to his application for the original patent therefor, and if the said Beck ever had any right to a patent for the alleged improvements specified as his invention in said original patent and reissues, and any right to have the same secured by letters patent, he had forfeited the same by his delay in applying for letters patent, and the said Beck, before making said application for said original patent, had abandoned the same to the public and allowed the same to go into public use with his full knowledge and consent, and that the public had accepted and used the same in pursuance of such abandonment.

And the defendant, further answering, says, on information and belief, that the substantial and material parts of the said invention claimed as new in said reissued patent No. 9097, and alleged to be infringed by this defendant, were well known and in public use long prior to the alleged invention thereof by said Beck, and for more than two years prior to his application for a patent therefor, and that the said Beck was not the first and original inventor thereof, and that such prior knowledge and use was had by the following-named persons at the places mentioned, viz:

T. A. Macaulay, at the city of New York, State of New York, and now residing in said city.

And this defendant, further answering on information and
15 belief, says that the substantial and material parts of said
alleged invention claimed by said reissue No. 9097 and alleged to be infringed by this defendant as aforesaid were, prior to the pretended invention thereof by said Beck, also shown and described, patented and published, in the letters patent as follows, viz:

Letters patent of the Kingdom of Great Britain, numbered 198, and dated January 25, 1862, granted to Edwin Augustus Curley, for a sewing-machine.

Letters patent of the Kingdom of Great Britain of the year 1866, and numbered 2419.

Letters patent of the Kingdom of Great Britain, No. 2439, of the year 1867, and granted to William Muir, for a multiple sewing-machine.

Letters patent of the Kingdom of Great Britain, No. 2416, dated July 9, 1874, and granted to Morrell, Parkinson & Parkinson, for a sewing-machine.

Letters patent of the Kingdom of Great Britain, No. 1582, dated April 29, 1875, granted to Henry Oram, for sewing-machine.

Letters patent of the United States, numbered 90354, and granted May 25, 1869, to T. O. Foot, for sewing-machine.

Letters patent of the United States, numbered 86057, and granted January 19, 1869, to F. P. Canfield, for sewing-machine.

Letters patent of the United States, No. 159,884, granted to August Beck Feb. 16, 1875, for a sewing-machine for quilting.

And the defendant, further answering, denies that he has in any manner infringed or is now infringing any lawful rights of the complainant, or has in any way injured the complainant by the manufacture and use of quilting-machines, or that the complainant is entitled to any relief in the premises, and the defendant prays to be hence dismissed with his reasonable costs and charges in this behalf most wrongfully sustained.

WILLIAM WIESE.

G. M. PLYMPTON,
Solicitor for Def't and of Counsel.

16 UNITED STATES OF AMERICA.

SOUTHERN DISTRICT OF NEW YORK, } *ss:*
City and County of New York, }

On this thirtieth day of July, 1880, before me personally appeared William Wiese, who, being duly sworn, deposes and says that he is the defendant in the above-entitled suit, and has read the foregoing answer and knows the contents thereof, and that the same is true of his own knowledge, except as to those matters which are therein stated to be upon information and belief, and as to those matters he believes it to be true.

[L. S.] H. L. WATTENBERG,
Notary Public, N. Y. City & Co.

(Endorsed:) U. S. circuit court, south. dist. N. Y. Louis Dryfoos *vs.* William Wiese. Answer. Gilbert M. Plympton, sol'r for def't, 245 Broadway, N. Y. city. U. S. circuit court. Filed Sep. 1, 1880. John I. Davenport, clerk.

17 Circuit Court of the United States for the Southern District of New York. In Equity.

LOUIS DRYFOOS *vs.* WILLIAM WIESE.

The replication of Louis Dryfoos, complainant, to the answer of William Wiese, defendant.

This repliant, saving and reserving unto himself all and all manner of advantage of exception to the manifold insufficiencies of the said answer, for replication thereunto says that he will aver and prove his said bill to be true, certain, and sufficient in the law to be answered unto, and that the said answer of the defendant is uncertain, untrue, and insufficient to be replied unto by this repliant, 18 without this, that any other matter or thing whatsoever in the said answer contained material or effectual in the law to be replied unto, confessed and avoided, traversed or denied, is true; all which matters and things this repliant is and will be ready to aver and prove as this honorable court shall direct, and humbly prays as in and by his said bill he has already prayed.

WETMORE & JENNER,
Solicitors for Compl't, 11 *Pine St., N. Y. City.*

(Endorsed:) U. S. circuit court, southern district of New York. Louis Dryfoos *vs.* William Wiese. Replication. Wetmore & Jenner, compl't's sol'rs. U. S. circuit court. Filed Sept. 15, 1880. John I. Davenport, clerk.

19 U. S. Circuit Court, Southern Dist. of New York.

LOUIS DRYFOOS *vs.* WILLIAM WIESE.

On reading and filing the annexed consent and on motion of Wetmore & Jenner, solicitors for complainant, it is ordered that John H. Ives, Esq., notary public, 11 Pine St., New York city, be, and he is hereby, appointed special examiner in this cause to take the testimony of such witnesses as may be brought before him on behalf of the complainant under the 67th rule, in equity, as amended.

(Signed) SAM'L BLATCHFORD.

Dated at the chambers of the court, in the post-office building, New York city, on the — day Jan., 1881.

20 United States Circuit Court, Southern District of New York.

LOUIS DRYFOOS, Compl't, *vs.* WILLIAM WIESE, Def't.

It is hereby consented that John H. Ives, Esq., notary public, 11 Pine St., New York city, be appointed special examiner in this cause to take the testimony of such witnesses as may be brought before him on behalf of the complainant under the 67th rule, in equity, as amended.

(S'g'd) WETMORE & JENNER,
Compl't's Sol'rs.

(S'g'd) G. M. PLYMPTON,
Sol'r for Def't & of Counsel.

Dated New York, Jan'y 18, 1881.

21 (Endorsed:) U. S. circuit court, southern dist. of New York. Louis Dryfoos *vs.* William Wiese. Consent and order appointing special examiner. Wetmore & Jenner, sol'rs for complainants, 11 Pine St., New York. U. S. circuit court. Filed Jan. 24, 1881. Joseph M. Deuel, clerk.

22 U. S. Circuit Court, Southern District of New York.

LOUIS DRYFOOS, Complainant,
against
WILLIAM WIESE, Defendant.

Testimony taken on behalf of the complainant before John H. Ives, special examiner, under the 67th rule, in equity, as amended.

NEW YORK, *January* 22, 1881.

Present: Edmund Wetmore, Esq., counsel for complainant; G. M. Plympton, Esq., counsel for defendant.

JOSEPH F. ROBERTS, a witness produced on behalf of the complainant, being duly sworn, testifies as follows:

1 Q. What is your name, age, residence, and occupation?

A. Joseph F. Roberts; 36 years of age; residence, 96 Erie street, Jersey City; occupation, machinist.

2 Q. How long have you worked at the occupation of a machinist?

A. Eighteen years, about,

3 Q. Are you familiar with the operation and mechanism of sewing and quilting machines?

A. I am.

4 Q. What experience have you had in working on such machines, or seeing their work, or making or repairing them?

A. I have been employed off and on by the Singer Company for 14 years and kept a repair shop myself.

23 5 Q. Are you acquainted with Mr. Wm. Wiese, the defendant in this case, or have you seen him?

A. I am not acquainted with him; I do not know as I have ever seen him.

6 Q. Do you know where his place of business was in the city of New York, or factory, prior to the 1st of May last?

A. To the best of my knowledge it was in Hudson street, somewhere near Bank street.

7 Q. Did you visit that factory shortly prior to the 1st of May last?

A. I did.

8 Q. Did you see any quilting-machines in operation at that factory?

A. I did.

9 Q. How many?

A. Three or more; I cannot say just exactly how many.

10 Q. Will you please state how the said machines or any one of them which you examined and saw in operation compared with the machine here present, which the examiner will mark Exhibit D for identification, in the particular of the feeding mechanism, the gang of needles, and the motion of said feeding mechanism and needle gang?

A. In reference to the machine it had the general appearance of that machine, with a bank of needles and conical feed.

11 Q. Were the rollers the same side of the needle gang as they are in Exhibit D?

A. That I cannot say.

12 Q. Were the conical feed-rollers behind or forward the needle gang?

Objected to. Witness said he could not say on which side the rollers were placed with reference to the needles.

A. I cannot say.

13 Q. How many conical rollers constituted the feed?

24 A. Two or three; I cannot say.

14 Q. How were the rollers, as to their surface, with respect to being rough or smooth?

A. I cannot say.

15 Q. Was there a strip of goods going through the machine when you saw it?

A. There was.

16 Q. Straight or conical?

A. Conical.

17 Q. Was this strip fed through the conical rollers?

A. As near as I could judge so.

18 Q. Was there a cloth-plate to support the strip when it was being fed through?

A. I can't say.

19 Q. What did the goods rest on when they went under the needles?

A. I can't say.

20 Q. How was the motion of the feed, with respect to being continuous or intermittent? I mean when the machine was in operation did the feed feed the goods and then stop, and then feed and then stop, or was the motion of the feed continuous every moment?

A. There was a ratchet on the machine.

21 Q. And what was the effect of that ratchet on the machine—how did it compare in its motion with Exhibit D?

A. Regulated the stitch.

22 Q. Did the feed work when the needles were down or up?

A. I can't say; I suppose they must have worked when they were up.

23 Q. Did the needles or the feed, either of them, move back and forth sideways as the cloth passed through them, and how did its operation compare in that respect with the motion of Exhibit D when in operation?

A. I cannot say as to that.

24 Q. Did you see the product of the machine after it was quilted—the quilted strip after it had passed under the needles?

25 A. I did.

25 Q. How did the said quilted strips which you saw coming out of Mr. Wiese's machine compare with the quilted strip here shown you?

Objected to. Witness has not stated that he saw the material coming out of Mr. Wiese's machine or machines, or that he saw any machines of Mr. Wiese's.

A. I did not examine them.

Cross-examination by Mr. PLYMPTON:

26 X Q. When were you at this place in Hudson street near Bank?

A. Between the 1st of April and the 1st of May; I can't say which; it was between that time.

27 X Q. Were you there more than once or on any other occasion?

A. No, sir.

28 X Q. How long were you there on this one occasion?

A. About ten or fifteen minutes.

29 X Q. Did you go up to any of the machines and examine them there, or were you some distance from them?

A. Some distance from them.

30 X Q. About fifty feet from the machine where you stood, were you?

A. No, sir.

31 X Q. About how far?

A. Between fifteen and twenty-five.

32 X Q. How many machines did you see?

A. Well, I looked at one; there may have been three or more.

33 X Q. That one you only looked at from the distance you have named, did you?

A. I did, sir.

34 X Q. And made no other examination of it?

A. No, sir.

26 35 X Q. You say the cloth was passing through the machine at the time it was in operation?

A. Yes, sir.

36 X Q. What part of this one machine did you see from where you stood—the front, rear, or the end?

A. I could see the front and one end.

37 X Q. Which end did you see?

A. I can't say positively, but I saw the ratchet and the screw, as near as I can remember that end.

38 X Q. Do you swear positively that you saw the front of this one machine at the time of your visit?

A. No, sir; I do not swear positively.

39 X Q. It might, then, have been the back that you saw?

A. Yes.

40 X Q. As the goods passed from the machine were they gathered on the floor, or were they reeled up near the ceiling?

A. They were reeled up above the machine.

41 X Q. Whom did this machine or any of the machines that you saw on this occasion belong to?

A. I cannot say, sir.

42 X Q. Did the feed device in the machine which you saw operate intermittingly in the intervals between the formation of the stitches, and extend and operate substantially across or from edge to edge of the conical strip of goods, and which, as it departed from a shorter curved edge and approached the longer curved edge of said goods, was adapted to have a proportionately increased range of feed movement?

A. I can't say.

43 X Q. At this place in Hudson street how many persons did you see at the time of your visit?

A. I did not count them.

44 X Q. Who went with you, or were you alone at the time of this visit?

A. There was another gentleman with me.

45 X Q. Was he a representative of the board of health?

A. As to that I can't say.

27 46 X Q. What was his name?

A. I can't say.

47 X Q. Will you swear that the machine you saw at the time of your visit had conical feed-rolls?

A. As near as I could judge, they had.

48 X Q. Will you swear that they had or not?

A. No; I will not.

49 X Q. Will you swear that there was more than one feed-roll on the machine that you saw or any of them?

A. No, sir.

50 X Q. Do you know in whose interest this machine or those machines were being operated?

A. I do not.

JOSEPH T. ROBERTS.

Attest: JOHN H. IVES,
Special Examiner.

Machine offered in evidence and marked for identification Complainant's Exhibit D.

Examination adjourned by consent to Thursday, January 27, 1881.

NEW YORK, *January* 27, 1881.

Parties met pursuant to adjournment.
Present: Counsel as before.

WILLIAM WIESE, a witness produced on the part of the complainant, being duly sworn, testified as follows:

1 Q. What is your name, age, residence, and occupation?

A. William Wiese; age, 39; residence, 410 Second avenue; occupation, machinist.

2 Q. Are you the defendant in this case?

A. I am.

28 3 Q. Where were you engaged in business in the month—April, 1880?

A. 584 Hudson, corner of Bank street.

4 Q. What business were you then carrying on?

A. Machine-shop.

5 Q. Did you have in use in your shop at that time any quilting-machines?

A. Yes, sir.

6 Q. How many?

A. Four or five; I could not tell exactly.

7 Q. Did you build those machines yourself?

A. No.

8 Q. Where were they built?

A. They were built in the same place.

9 Q. Who made the plans for them?

A. Well, they were built by the Union Machine Perforating Company.

10 Q. Do you belong to that company, or were you in its employ?

A. I belong to that company.

11 Q. Did you see these machines while they were in the course of construction, or any of them?

A. I did.

12 Q. Did you give any directions as to their construction or any part of them?

A. I did so.

13 Q. Do you know how they were built and the way in which they operated?

A. I do.

14 Q. Are they still in operation at that establishment?

A. Not at present.

15 Q. Please look at the skirt herewith shown you and marked "Lady Washington," and state, if you can, if that skirt or skirts like it were quilted in the machines you have referred to.

A. I could not tell positively whether that was made in my machine.

29 16 Q. Did the machine or machines do quilting work so as to produce the same result as appears on the two skirts here shown you and marked "Lady Washington?"

A. Yes, sir.

17 Q. Were those machines furnished with a gang or series of needles stretching across the goods and operating together?

A. They were.

18 Q. Did the machines quilt conical strips of goods?

A. Yes, sir.

19 Q. Was the strip to be quilted supported by a cloth-plate as it passed through the machine during any part of its passage?

A. Yes, sir.

20 Q. Did that cloth-plate support the goods beneath the needles so as to hold the goods until they were fed up under the needles?

A. Yes, sir.

21 Q. Did the feed or any part of it consist of one or more conical rollers?

A. No, sir.

22 Q. Was there never a conical roller as any part of the feed at any time placed in any one of the machines?

A. No, sir.

23 Q. Was there a straight roller employed as part of the feed?

A. There was.

24 Q. More than one straight roller?

A. Two straight rollers.

25 Q. Did the goods pass between those two straight rollers? By rollers I have and do refer to the feed-rollers.

A. No.

26 Q. Did the goods pass beneath the roller and between the roller and the cloth-plate?

A. Yes, sir.

27 Q. Were they held between the roller and the cloth-plate across the whole length of the roller?

A. No, sir.

28 Q. Is there any part from one end of the straight roller to the other where the straight roller does not rest upon the goods?

A. Yes, sir.

29 Q. Is that by reason of any part of the roller being cut away or by reason of one end of the roller being higher than the other above the cloth-plate or by reason of the cloth-plate or any part of it being cut away or one end of the cloth-plate being higher or lower?

A. No, sir.

30 Q. How, then, is it possible that the roller and the cloth-plate should not hold the goods between them all the way across the length of the goods? Please explain how the goods pass beneath the rollers and between that and the cloth-plate without the goods as they pass beneath being held all the way across from one end to the other.

A. I hold the strip of goods at both ends.

31 Q. Does the rough sketch I have made and herewith show you represent substantially the feed-rollers and cloth-plate to which you have referred, there being, if I understand your verbal explanation, two feed-rolls at each end of the width of goods, the presser-rolls on top, and the goods passing beneath the feed-rolls and cloth-plate?

A. Yes; similar to that.

(Sketch offered in evidence and marked Complainant's Exhibit "Sketch." J. H. I.)

32 Q. Do the goods pass between or beneath any other roller or rollers after they have passed the feed-roll?

A. They do not.

33 Q. Do one of the feed-rolls move the goods faster than the other?

A. Yes, sir.

34 Q. About how wide is the distance apart of the two feed-rolls from end to end? I refer to the points I have marked A and B on Exhibit "Sketch."

A. I guess about eight or nine inches.

35 Q. And about what is the length of the feed-rolls?

A. About three inches—that is, each one.

36 Q. Did the frame of the machine carrying the needles reciprocate laterally?

A. Yes, sir.

31 37 Q. And the feed-rollers did not have the sideways motion; is that correct?

A. They do not move.

38 Q. Did the feed act intermittently during the formation of the stitches—that is, stand still while the needles were in the goods forming the stitch and then move while the needles were up?

A. They do not. I mean a continued feed or continuous motion of the feed-rollers.

39 Q. Do you mean that the feed-rollers are operating upon the goods to feed the goods at the same time the needles or any of them are passing through the goods in the act of forming the stitch?

A. I do.

40 Q. Is there any presser-foot acting upon the goods at any time during their passage through the machine beside the feed-rolls?

A. Yes, sir.

41 Q. Does that presser-foot act continuously, or does it alternately hold and release the goods?

A. It holds and releases the goods.

42 Q. Does it hold the goods while the stitch is forming and the needles are in the cloth?

A. Yes, sir.

43 Q. Did the machine that you have been describing employ pattern cams. By pattern cam or wheel I mean a wheel or cam like that which appears on the complainant's machine, Ex. D, which regulates the sideways motion of the frame of the machine which carries the needles and which I have just shown you on the machine.

Objected to. It does not appear that that machine is made in accordance with the patent in the suit, and is therefore irrelevant.

A. I have something similar to that you showed me.

44 Q. Did the machines have one presser-foot for each needle?

32 A. No, sir.

45 Q. Did it have one continuous presser-foot all the way across the gang of needles?

A. Yes, sir.

46 Q. Were the presser-rolls and feed-rolls before or behind the gang of needles? I call before the side from which the goods are fed up to the needles to have the stitch made.

A. Behind.

47 Q. And did the presser-foot operate cross the strip substantially from edge to edge?

A. It does.

48 Q. Was the presser-foot before or behind the needles, or did the needles work through holes in the presser-foot?

A. Behind the needles.

49 Q. Between the needles and the feed-rollers?

A. Yes, sir.

50 Q. All my questions in regard to the machines have had reference to the machines which, in the first part of your testimony, you stated were in operation at your place of business about April, 1880, but which you said are not still in operation at that factory, and I understand that your answers have reference to those machines that were there in April. Is that correct?

A. That is correct.

Complainant's counsel offers in evidence skirts, marked Complainant's Exhibit Wiese Skirt.

Cross-examination by Mr. PLYMPTON:

51 X Q. Does the machine or machines which you have testified about belong to you, or are they worked in your interest?

A. They do not belong to me.

52 X Q. To whom do they belong?

A. They belong to the Union Machine Perforating Company.

33 53 X Q. Are you an officer in that company?

A. No, sir.

54 X Q. Is it an incorporated company?

A. Yes, sir.

55 X Q. If you know, when was it chartered?

A. Chartered March 5th, 1880.

56 X Q. You say you are a machinist. Do you work for that company?

A. Yes, sir.

57 X Q. Is that what you mean, in your answer to the 10th direct question, when you say you belong to that company?

A. Yes; that is what I mean.

58 X Q. Did these machines concerning which you have testified ever belong to you?

A. No, sir.

59 X Q. Did you ever operate them yourself on your own account?

A. No, sir.

60 X Q. Were these machines that are now in Hudson street that you have testified about originally built for the Union Perforating Machine Company, and have they been run solely in the interests of that company since their construction?

A. They have.

61 X Q. The feed-rolls in one of the machines, if I understand you correctly, consist of a shaft with two rollers fixed at its extremity, the rollers being the same diameter throughout and much larger in diameter than the diameter of the shaft on which they are placed. Is this correct?

A. That is correct.

62 X Q. Please state about the diameter of the feed-rollers and that of the shaft on which they are fixed.

A. The shaft is about an inch in diameter and the rollers might be two inches or more.

63 X Q. Is that shaft with the rollers horizontal and parallel with the bed-plate of the machine, or does it incline, more or less, from one end to the other?

A. Parallel.

34 64 X Q. Now, in addition to these two feed-rollers there are two presser-rollers, one immediately over each of the feed-rollers. Is that right?

A. That is right.

65 X Q. And in addition to these two feed-rollers and two presser-rollers there is a presser-foot, consisting of a bar of metal vertically adjustable. Is that right?

A. That is right.

66 X Q. And have you now described all the devices which operate directly with the goods that are sewed, constituting together the feed?

A. I have.

67 X Q. With this feeding mechanism you quilt garments—that is, you make crossed diagonal lines of stitches?

A. I do.

68 X Q. And you can quilt such garments when they have angular or conical sides or edges?

A. Yes.

69 X Q. You have said that during the process of sewing or quilting these goods the feed is not intermittent, but continuous. On this point are you certain?

A. I am.

70 X Q. State now how you sew goods that are passing continuously under the action of the needle by the continuous feed and, as I understand you to have said, while the frame carrying the needles reciprocates from right to left.

A. When the frame moves the needles are out of the garment. When the needles are in the garment the centre gang swings to the rear, carrying the goods through with them.

71 X Q. How is this movement of the needles accomplished?

A. Regulated by a cam.

72 X Q. What results from this swinging movement of the gang of needles?

A. The object is to have a continuous feed.

35 73 X Q. Now, Mr. Weise, in sewing conical goods is it necessary that one part of the goods should be advanced by the feed faster than the other part?

A. Yes; it is necessary.

74 X Q. State particularly how that is done in the machine which you have been describing.

A. The feed-rollers are independent, each one for itself. I can set them so that one will feed faster than the other.

75 X Q. Do you mean that each of the two feed-rollers revolve independently of the other on their supporting or connecting shaft?

A. Yes, sir.

76 X Q. State how you can adjust the rollers so that one will revolve faster than the other.

A. One end of the shaft which connects those two rollers revolves loosely in one of the rollers. The other end of the shaft is screwed fast to the other roller. Then there is a driving-shaft that is geared to the two rollers, so that by simply changing the gear-wheels the rate at which one or both of the feed-rollers revolves can be regulated.

77 X Q. On the machine with the feeding device you have just described can you quilt goods that have straight sides—that is, that are not conical?

A. Yes, sir.

78 X Q. And is this done by adjusting the speed of both by the feed-rollers so they will revolve equally fast?

A. Yes, sir.

79 X Q. Up to this time you have described one machine only. State whether there is another machine in the office of the Union Machine Perforating Co which they use and which has a feed device of different construction from that which you described.

A. There is.

80 X Q. State the construction of the feed in that machine—if that machine was in use before May or June, 1880.

36 A. It was used prior to that time. The feed is a regular drop-feed like the Singer's or any other drop-feed in common use.

81 X Q. On this machine with the drop-feed can you quilt conical garments and also garments with straight sides?

A. I can; yes, sir.

82 X Q. And has it been used for doing such kind of work?

A. Yes, sir.

83 X Q. Do you remember the cam which was shown to you this morning on a full-sized sewing-machine at Mr. Dryfoos's place, the complainant's place of business?

A. I do.

84 X Q. Look at the reissue No. 9097 on which this suit is brought, and state whether, in your judgment as a machinist and builder of

sewing-machines, the cam S′ on the drawings of that reissue are the same or substantially the same as the cam which you saw on the Dryfoos machine referred to.

A. It is not the same, in my opinion.

85 X Q. Now state whether or not in the sewing-machine or machines owned, manufactured, and operated by the Union Machine Perforating Co. in Hudson St. near Bank, or any machine or machines owned and operated by yourself at that place or anywhere else, have the combination with the series or gang of serving mechanisms and the cloth-plate which supports the goods under the action of the same, of a feed device operating intermittingly in the intervals between the formation of the stitches, which extends and operates substantially across or from edge to edge of the conical strip of goods, and which, as it departs from the shorter curved edge and approaches the longer curved edge of said goods, is adapted to have a proportionately increased range of feed movement, substantially as and for the purpose set forth in the reissue 9097, which I now hand and ask you to examine.

Objected to as not relating to the subject-matter of the witness direct testimony.

37 A. I can state that I never saw that in operation in the Union Machine Perforating Company's office, and I never used it myself; I mean that I never saw any such combination of parts or such operation in any machines of the company or my own.

86 X Q. State whether in any machine manufactured, owned, or operated by the Union Machine Perforating Company or by yourself there is or was a series of vertically reciprocating needles, mounted in a laterally reciprocating sewing frame, of conical feed rolls and mechanisms for causing them to act intermittingly during the intervals between the formation of stitches substantially as shown and described in the reissue No. 9097 (a copy of which I now hand you).

Same objection as last question.

A. There was no such combination in any of the machines inquired about.

86½ X Q. State whether in any of the machines manufactured or used by the Union Perforating Company or by yourself now or at any time have the mechanism shown and described in the reissue No. 9097 (a copy of which I now hand you) for operating the feed, consisting of a friction clutch clasping the feed-shaft, in combination with a vibratory lever, supported on one end of the clutch and having one of its arms overhanging, but not attached to the other and free end of the clutch, substantially as set forth in the reissue referred to, so that the movement of said lever shall cause the clutch first to close upon the shaft; then to rotate the same, as set forth in said reissue, whether the said mechanism be used to operate the forward or lateral feed.

Same objection.

A. I have not seen anything like it; neither myself nor the company have made or used any machine with such a combination.

38 87 X Q. State whether in any machine or machines manufactured or sold by yourself or by the Union Machine Perforating Co. there entered into combination the friction clutch, the feed-shaft and embraced by the same, and the vibratory lever provided at that end, which acts on the clutch with means of adjustment, whereby the lost motion of the lever may be increased or decreased at pleasure to regulate the length of feed.

Same objection.

A. No; I never used that myself and never saw it used by the company.

Complainant's counsel here states that no claim for infringement is made under the 5th and 6th claims of the patent.

Redirect examination:

88 X Q. Are you a stockholder in the Union Machine Perforating Co.?

A. Yes, sir.

89 X Q. A trustee or director?

A. I am one of the trustees.

90 X Q. During the time that the machines that you have referred to were in use in the shop or factory in Hudson street, corner of Bank, were you in charge of the shop either on your own behalf or on behalf of the company?

A. I was not.

91 X Q. Was there any other agent or officer of the company who had charge of the establishment besides yourself; if so, who?

A. William Koch.

92 X Q. Who occupied those premises before the 5th day of March, immediately before the company was formed?

A. It was the same company, but it was before we had the charter.

93 X Q. You mean, I presume, that the same persons
39 carried on business there before the company was incorporated as after? You don't mean to say, do you, that the company had any existence before it had its charter of incorporation?

A. I mean that there was the same company doing business there, but that they got their charter in March.

94 X Q. Has that company ever had any other office, factory, or place of business than the corner of Hudson and Bank streets?

A. No, sir.

95 X Q. You were one of the persons doing business there prior to the 5th day of March?

A. Yes, sir.

96 X Q. Did anybody but yourself have anything to do with the designing of the machines to which you refer—I mean who suggested the plan of the feeding mechanism and parts of the machine that you have described and superintended their construction?

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A. It is not the same, in my opinion.

85 X Q. Now state whether or not in the sewing-machine or machines owned, manufactured, and operated by the Union Machine Perforating Co. in Hudson St. near Bank, or any machine or machines owned and operated by yourself at that place or anywhere else, have the combination with the series or gang of serving mechanisms and the cloth-plate which supports the goods under the action of the same, of a feed device operating intermittingly in the intervals between the formation of the stitches, which extends and operates substantially across or from edge to edge of the conical strip of goods, and which, as it departs from the shorter curved edge and approaches the longer curved edge of said goods, is adapted to have a proportionately increased range of feed movement, substantially as and for the purpose set forth in the reissue 9097, which I now hand and ask you to examine.

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Same objection as last question.

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Same objection.

A. I have not seen anything like it; neither myself nor the company have made or used any machine with such a combination.

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Same objection.

A. No; I never used that myself and never saw it used by the company.

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Redirect examination:

88 X Q. Are you a stockholder in the Union Machine Perforating Co.?

A. Yes, sir.

89 X Q. A trustee or director?

A. I am one of the trustees.

90 X Q. During the time that the machines that you have referred to were in use in the shop or factory in Hudson street, corner of Bank, were you in charge of the shop either on your own behalf or on behalf of the company?

A. I was not.

91 X Q. Was there any other agent or officer of the company who had charge of the establishment besides yourself; if so, who?

A. William Koch.

92 X Q. Who occupied those premises before the 5th day of March, immediately before the company was formed?

A. It was the same company, but it was before we had the charter.

39 93 X Q. You mean, I presume, that the same persons carried on business there before the company was incorporated as after? You don't mean to say, do you, that the company had any existence before it had its charter of incorporation?

A. I mean that there was the same company doing business there, but that they got their charter in March.

94 X Q. Has that company ever had any other office, factory, or place of business than the corner of Hudson and Bank streets?

A. No, sir.

95 X Q. You were one of the persons doing business there prior to the 5th day of March?

A. Yes, sir.

96 X Q. Did anybody but yourself have anything to do with the designing of the machines to which you refer—I mean who suggested the plan of the feeding mechanism and parts of the machine that you have described and superintended their construction?

A. A part of that I did myself and a part of it was done by William Koch.

97 X Q. Is William Koch a machinist?

A. Yes, sir.

98 X Q. Were the machines of any different patterns in respect to their feeding devices than the two kinds you have already described?

A. No, sir.

WILLIAM WIESE.

Attest: JOHN H. IVES,
Special Examiner.

Adjourned to new notice.

40 NEW YORK, *February* 12, 1881.

Parties met pursuant to notice.

Present: Counsel as before.

Redirect examination of WILLIAM WIESE:

99 Q. Have you been a stockholder and director in the Union Machine Co. since it was formed on the 5th day of March, 1880?

A. I was.

100 Q. Referring to the machine having the roller-feed, mentioned by you in your previous testimony, being one of the machines used at the establishment in Hudson street, in which you state the needles had an oscillating or swinging motion, did the whole gang of needles in that machine swing each one the same distance, or did the needles at one end of the needle-bar travel a greater distance than at the other?

A. I have got them so that I can regulate them to swing at one side more than the other.

101 Q. Will you please briefly explain, if you can, the mechanism by which this regulation of the needles is effected?

A. I have got two cams in the main shaft behind the machine; these cams are connected by a pitman to the needle-bar at each end.

102 Q. Does the whole bar swing?

A. Yes, sir; I can show it by sketch.

Witness makes sketch, which is marked Wiese Sketch No. 2.

103 Q. If I correctly understand the sketch, the whole needle-bar, through a pitman and cam-regulated connection, marked A and B in the sketch, is permitted or made to swing in the direction in which the cloth moves, and one end where the conical strips are fed through the machine is made to swing through a greater
41 distance than the other to accommodate it to the longer edge
of the strip. Is that correct?

A. That is correct.

104 Q. And when the needles are out of the cloth do they swing back with the needle-bar to the position they were at the beginning of the stroke?

A. They do.

105 Q. When you feed straight strips through the machine you have been describing do you regulate the needle-bar so that it does not have any swinging motion at all?

A. No.

106 Q. It swings, but it swings even?

A. Yes.

107 Q. Is the drop-feed of the other machine you mentioned, what is ordinarily known as the four-motion feed, seen on the Wheeler & Wilson and other sewing-machines?

A. Yes, sir.

108 Q. Is this drop or four-motion feed-machine adapted for quilting wide goods, such as skirts?

A. Yes; we only quilt full skirts on them.

109 Q. About how many needles are there in the needle gang of that machine?

A. We have got some at 19 and some at 18.

110 Q. Is the feed a single feed all the way across the gang, or how?

A. No; there is some four separate feeds; I think about all four separate feeds; may be some more.

111 Q. In the sketch which I have made and you have just verbally explained to me, I understand A, B, C, and D represent the positions of the feed, and the goods travel through in the direction of the arrow, the long edge and short edge being as marked, and that the feeds are not adjusted to run at different speeds, but that the weight of the cloth at the short edge so drags at that end that the long edge is fed through sufficiently fast to carry it in the required curve. Is this correct?

42 A. That is correct.

Witness produces sketch, which is marked in evidence "Sketch Wiese No. 3."

112 Q. Is there a single presser-foot on this machine or a separate presser-foot for each feed?

A. There is a separate presser-roller for each feed.

113 Q. Is there a cloth-plate on both of those machines?

A. Yes, sir.

114 Q. And I suppose in the drop or four-motion feed-machine the feed acts intermittently and the goods move when the needles are out of the cloth; is that so?

A. Yes, sir.

115 Q. Has the Union Perforating Machine Co. any superintendent of its workshop?

A. Yes, sir.

116 Q. Who is the superintendent?

A. William Koch.

117 Q. Mr. Wiese, are you in the employ of the company?

A. I work for them and they pay me.

118 Q. And has that been so since their incorporation, in March, 1880?

A. Yes, sir.

Cross-examination reserved.

WM. WIESE.

Attest: JOHN H. IVES.

43 New Yory, *February* 14, 1881.

Parties meet pursuant to notice.
Present: Counsel as before.

Recross-examination of William Wiese by Mr. Plympton:

119 X Q. In your answer to the 70 X Q., among other things, you say: "When the needles are in the garment the entire gang swings to the rear, carrying the goods through with them." Do you wish to be understood, in making that statement, that the needles feed or by their backward movement assist in feeding the goods through the machine?

A. No; the needles have got nothing to do with the feed.

120 X Q. Would the goods or garment feed through the machine as perfectly without the backward swinging of the needles as with it?

A. They would.

121 X Q. Then the passage of the goods through the machine is due, if I understand you rightly, solely to the action of the feed and presser rollers?

A. Yes, sir.

122 X Q. And the feeding movement of the goods through the machine is independent of the swinging motion of the needles, and the swinging motion of the needles is independent of the feeding of the cloth or goods; is that right?

A. That is right.

123 X Q. Do the needles in their backward swing move at the same rate of speed as do the goods which are being fed through the machine?

A. They do.

124 X Q. And is that what you mean in your answer to the 70 X Q. by saying, "When the needles are in the garment the entire gang swings to the rear, carrying the goods through with them?"

44 A. Yes; that is what I mean by it.

125 X Q. Respecting the machine or machines which you have described as having a drop or four-motion feed, you state that this feed is the same as the Wheeler & Wilson feed, and is in common use, and that the motion of the feed is intermittent, and that such machines are furnished with cloth-plates and a gang or series of needles. State now whether before you made or used these machines with drop-feed you had known such feed in sewing-machines with more than one needle at any time previous?

Objected to as not a subject of cross-examination.

A. Yes, sir.

126 X Q. How long previous to the making of the machines in question?

Same objection.

A. About 15 years.

Redirect:

127 R. D. Q. How do you know that in the swinging-needle machine the needles do not help in carrying the goods through the machine?

A. I stated before that the feed works the same without the needles, so if I take the needles out and put in a piece of garment it will feed the same way.

128 R. D. Q. Have you ever taken the needles out and fed through a conical strip of goods of the same weight, size, and shape as the conical skirts quilted on the machine and carefully observed the effect of such experiment?

A. I did.

129 R. D. Q. When?

A. I always do that when I set my feed.

130 X Q. Now, how do you know that the needles travel all the way across the needle-bar, every needle at precisely the same rate of speed that the cloth it sticks into is making the stick travel?

A. I stated before that I had a cam to regulate that.

131 X Q. Can those regulating cams that you spoke of, which regulate the motion of the whole needle-bar, make it certain that every needle all the way across the bar swings exactly at the same rate of speed as the speed of that part of the cloth which is passing beneath each particular needle and through which the needles go in making the stitch?

A. Yes, sir.

132 X Q. Does the cloth go through this machine without dragging in any part of its width?

A. No dragging at all.

133 X Q. Do you remember about what is the diameter of your presser feed-rolls in that machine?

A. I suppose I can tell—$2\frac{1}{2}$ inches each roller.

134 X Q. How is the swing of the needle-bar timed?

A. Time it by a cam.

135 X Q. About what is the longest distance which the needles are able to swing through?

A. About $\frac{1}{2}$ of an inch.

136 X Q. What is the cloth supported on that goes through the swinging-needle machine?

A. Supported on a cloth-plate or cover.

WM. WIESE.

Attest: JOHN H. IVES.

Adjourned to new notice.

NEW YORK, *June* 13, 1881.

Parties meet pursuant to notice.
Present: Counsel as before.

HENRY B. RENWICK, a witness produced on behalf of the complainant, being duly sworn and examined, testifies as follows:

46 1 Q. What is your name, age, residence, and occupation?

A. Henry B. Renwick; 64 years of age; I reside in the city of New York, and my principal occupation for many years past has been in connection with machinery and patented inventions.

2 Q. Please state briefly what experience you have had in the theory and practice of mechanics, particularly with reference to sewing-machines?

A. I have been acquainted with sewing-machines since 1848; have seen and examined most of the sewing-machines in the market since that time; have been examined as expert in many suits under sewing-machine patents; have drawn patents and reissues for sewing-machines, and have had occasion several times to examine the whole state of the art, not only in this country, but also as set forth in French and English books and patents.

3 Q. Have you read and do you understand the specifications of the complainant's patent reissue No. 9097?

A. I have read the patent several times, and believe I understand the machine described and the inventions referred to in the claims thereof.

4 Q. Please state what you understand to be the invention set forth and described in the specification of the said letters patent reissue No. 9097, and particularly referred to in the 1st and 2d claims thereof?

A. The machine described in the reissue No. 9097 consists essentially of a gang of needles and the shuttles or other accessories for making stitches and a feed apparatus for moving goods through the machine. The gang of needles has motion in two directions; the one up and down as is usual in sewing-machines, and the other in a horizontal plane so that the needles will make stitches in zigzags or scallops, either regular or irregular. Prior to the date of the patent on which the reissue is founded gangs of needles having motions in these two directions were well known and used in quilting or embroidering machines, and also prior to the date of 47 this patent there have been described quilting and embroidering machines in which the gang of needles had an up-and-down motion only, and the feed had the capacity not only of drawing the goods through the machine under the needles, but also the capacity to "shog" the goods or move them sideways so that zigzags and scallops could be produced in the same way as if this sideways or shogging motion was imparted to the needles. The machine described in the reissue is for the purpose of quilting a petticoat or articles which, when made up, are frustums of a cone. These petticoats are composed of pieces of goods the upper and lower boundaries of which are portions of parallel circles and the sides of which are straight lines inclined towards each other. If such goods were quilted in an ordinary quilting-machine the general or directing lines of the scallops or zigzags would be straight, but it is necessary, in order to give a good appearance to the goods and make them salable, that their general or directing lines should be curves parallel to the top and bottom curves of the pieces of which the petticoat is to be made, and in order to give such curvature to the directing lines it is necessary that the amount of motion imparted to the goods by the feed should, during any one interval of time, be greater at one end of the gang of needles than at the other end thereof, the goods thus progressing through the machine under the operation of the feed in curved lines instead of in straight lines, as was usual prior to the grant of the patent on which reissue No. 9097 is founded. In order to effect this purpose the feeding apparatus in reissue 9097 is composed of two conical rollers extending throughout the length of the gang of needles, and these two rollers are caused to revolve intermittently when the needles are out of the cloth, and they grasp the cloth or goods between them, because one roller is forced towards the other by means of a spring. If there were no shogging motion imparted to the needles, or if the pattern cam which imparts this motion were taken out of the machine, the machine would be useful in quilting conical articles in lines parallel to the curved tops and bottoms of the pieces of which the petticoats are composed.

48 As I understand it, the first claim of the machine refers to the combination of the gang of needles with the conical feed-rollers or their equivalent or known substitutes, and the cloth-plate which supports the goods under the action of the needles, whether the needles have or have not the shogging motion before referred to, and the second claim refers to the combination of the same parts, except the cloth-plate, when the needles have a laterally reciprocating or shogging motion.

5. Q. Please state if, at the request of complainant's counsel and by permission of the defendant, you have visited the establishment of the defendant at the factory of the Union Machine and Perforating Company, No. 584 Hudson street, New York, for the purpose of inspecting quilting-machines in use at that factory; and, if so, when?

A. I have; on the 11th of May, 1881.

6 Q. Will you please state whether you were there shown by Mr. Wiese certain quilting-machines, and will you please describe the construction and operation of the machines then and there examined by you?

A. Mr. Wiese, or a person who said that was his name, showed me these two classes of machines, both capable of quilting conical petticoat bottoms in the manner described in the reissue No. 9097. He called one of these classes of machines the continuous feed-machine. There were two machines of this class. This class of machine had a gang of needles and a long presser-foot serving for all the needles in the gang and operating like the ordinary presser-foot of a sewing-machine, except that it was lifted from the cloth to be quilted while the needles were out of the cloth. This gang of needles had a motion in the direction of the gang, sometimes called

the shogging motion, so that the machine could quilt scallops or wavy patterns in the cloth. The needles and presser-foot also had a swinging motion in the direction of the feed of the cloth, as in ordinary needle-feed machines. This motion was imparted to the needles and presser-foot by cams in such manner that one end of
the gang could move through a greater distance than the
49 other end of the gang, the gang thus accommodating itself
to comparatively long stitches on one side of the cloth and comparatively short stitches on the other side of the cloth.

These machines had a roller feed apparatus, the cloth being grasped between two sets of rollers, and the two sets of rollers being pressed together by means of springs. These rollers extended all across the width of the goods, but not continuously, there being three smooth rollers on the pressing-shaft with intervals between them and six rollers with intervals between them on the shaft to which the motion is imparted to feed the goods. On this last shaft three of the rollers were rough and three smooth. One of the rough rollers was 3¼ inches long, and it was located at one edge of the goods which were to be quilted. The other two rough rollers covered a space of 3½ inches in length and grasped the goods at the other side or edge thereof. The smooth rollers were located between the two rough rollers at one side and the other rough roller at the other side of the goods. The rollers on this shaft were moved by pauls and ratchet-wheels through the intervention of change gear, and the shaft on which the rollers were supported was cut in two, the long rough roller serving as a sleeve to keep the two parts of the shaft in line. This feeding-shaft was, therefore, in fact two shafts, having the same axis, and the construction of the actuating apparatus was such that the long rough roller made more revolutions in any given time than the two short rough rollers which acted on the other side of the goods. The revolution of these rollers was practically, though not absolutely, continuous, and it was possible for them to move in this practically continuous manner on account of the needles swinging with the goods, as before described. In consequence of the long rough roller moving faster than the short rough rollers the goods to be quilted were fed in curved lines in the manner described in reissue No. 9097, and the feed, although practically continuous, acted intermittently between the formation of the stitches, the feed carrying the goods along after the needles got
out of the cloth and until the needles, after having swung
50 backward or in the direction of the reverse of the feed, entered
the cloth again to make another set of stitches. These machines were not in use when I visited the factory, and at my request Mr. Weise put a belt on one of them so that I might see it in operation.

The other machines seen by me were drop-feed machines. There were five of them. Each of these machines had a gang of needles with a presser-foot, and the needles had a shogging motion as described in reissue No. 9097; but this gang of needles had no swinging motion such as I have described in the first of the machines referred to in the first part of this answer. The feed motion of these machines was composed of four rough surface four-motion feeds acting in connection with a presser-roller above the cloth, instead of with an ordinary presser-foot. Two of the feeds acted close upon the edges of the cloth, and two or three on parts of the cloth between the edges. All four of the feed-bars were attached to a long rock-shaft or rod greater in length than the width of the goods to be quilted, and they derived their motion to feed the goods from this rock-shaft, while their up-and-down motion to seize and to let go of the goods are derived from cams which underlie the feed-bars, as usual in sewing-machines. This long rock-shaft was mounted at each end outside of the outside feed-bars in the ends of two nearly upright levers, the end of the shaft entering loosely into holes in the lever. Those levers were supported on pivots which could be moved up and down vertically, the pivots entering slots in the levers and the whole construction being such that the two ends of each lever, measuring from the pivot, could be made of greater or less length in proportion to each other. The lower ends of each of these levers were acted on by cams, and in consequence of the revolutions of the cams the shaft or rod to which the feed-bars were attached, and consequently the feed-bars were moved backward and forward. The distance to which the feed-bars could be moved backward and forward so as to regulate the length of stitches could be altered 51 by moving the pivots before spoken of up and down in the slots of the lever, and, on account of the extreme looseness of the rods to which the feed-bars attached in the holes at the top of the levers, the pivots could be adjusted to different heights in the levers and the contrivance still operate. When so adjusted the rough surface at one edge of the goods moved through a greater distance than the rough surface at the other end of the goods, and the two or three intermediate rough surfaces also move through different distances at each motion to feed the cloth, and in consequence would feed goods to be quilted in curved lines in the same manner as described in reissue No. 9097.

When I saw these machines they were not in use, and I had one of them started up so that I could inspect it. Mr. Weise said when I saw these machines the pivots were so adjusted that all four or all five of the feed surfaces moved through the same distances at each stitch, and consequently that the goods to be quilted would be fed in straight and not in curved lines, unless twisted by the hands of the operators, and he said that he intended to so use the machines, although they had the capacity, by proper adjustment, of feeding the goods in curved lines, and were evidently constructed for the express purpose of being used so as to feed the goods in either curved or straight lines, as might be desired.

7 Q. Please state whether, in your opinion, the machines described by you in your last answer, which you saw under Mr. Weise's inspection, contain, when adjusted and operated so as to feed one side of the conical goods faster than the other, the combination of devices set forth and described in complainants' patent reissue No. 9097, and particularly referred to in the 1st and 2nd claims thereof, and please give your reasons for any opinion you may express.

A. In my opinion, both classes of machines contain the inventions described in the 1st and 2nd claims of reissue 9097. Both classes of machines have gangs of needles which have a shogging or, as it is called in the claim, a lateral motion, and both have a
cloth plate which supports the goods under the action of the
52 needles. So far as I know, Mr. Beck, on whose invention re-
issue 9097 is based, was the first to combine with a gang of needles a feed apparatus which would feed the goods in curved lines, and one element of both the 1st and 2nd claims of the reissue are the conical feed-rollers which cause this peculiar feed, and the claims, as I understand them, cover the known substitutes and equivalents of this feed. Long prior to the date of Beck's original patent a feed apparatus consisting of a roughened roller was used in the well-known Singer machine; so also was the so-called four-motion rough surface feed, such as was used in the original Wheeler & Wilson and Grover & Baker sewing-machines. Now, the peculiarity of the Beck invention consists in moving the feeding surface through a greater distance for every stitch at one side of the goods than at the other side or edge thereof, it being evident that the surface of a conical roller, or, to speak more accurately, of a conical frustum, moves when the frustum is revolved through a greater distance at the large end of the frustum than at the small end thereof. In consequence of these different lengths of movement at the two ends of the frustum the goods are moved through a greater distance at one edge than at the other edge, and consequently the feed of the whole cloth or goods is in curved lines.

In the first class of machines seen by me under the inspection of Mr. Wiese the surface of the rough feed-rolls at one edge of the goods moved faster than the surface of the rough roller at the other edge of the goods, not because the rollers were of different diameters, but because the surface of one roller was moved at a greater speed than the surface of the other roller, and the feed by means of these rollers was in operation when the needles were out of the cloth. In my opinion, this contrivance in the Wiese machine is precisely the same as the conical roller in reissue 9097. Although I consider the feeds of the first class of the Wiese machines substantially the same as
that described in reissue 9097, it is nevertheless an inferior
53 feed, and will not perform the duty required of it with such
exactitude as the conical rollers of reissue 9097.

The second class of the Wiese machine, when adjusted so that the feeding surfaces moved each to a greater distance than the other, commencing at one edge of the cloth and ending at the other edge thereof, have precisely the same mode of operation as the conical feed-roller of reissue 9097, but in them the rotary motion of a conical roller is transferred into the rectilinear motion of the feeding surfaces. These two directions of motion of roughened feeding surfaces were well known, as before stated, prior to Beck's invention, and therefore I consider the roughened surface of the Wiese machine as a mere substitute for the roughened surface of reissue 9097. Even if these two modes of moving the roughened surfaces were not well known substitutes for each other, I should be of the same opinion, because in both cases the cloth is fed by the motion of those surfaces, and to a distance depending upon the extent of motion of the surfaces, and, so far as the mere advancing of the cloth is concerned, it is immaterial whether the surfaces move in arcs of circles or in straight lines. I am aware that the conical rolls in reissue 9097 grasp the cloth to feed it over the whole width of the cloth, while in both classes of Wiese machines the feeding devices only act upon portions of the cloth. I do not think that any person could escape the Beck patent reissue 9097 by cutting gaps at intervals in his conical rollers, and I therefore treat the feeds of Wiese as if they acted over the whole width of the cloth to be quilted.

Further, in giving this answer, I have not lost sight of the fact that in the first class of Wiese machines the feed is operative not only when the needles are out of the cloth, but also when they are in the cloth; but this latter feeding motion is necessary because the needles swing when in the cloth. As, however, the roller-feed of Wiese acts while the needles are out of the cloth, and this action of the feed is intermittent, it appears to me that the operation of the feeding-rollers in this Wiese machine is, in the words of the
54 claim of reissue 9097, and not only in the words, but also in the substance of the claims of the same reissue, a feeding device "operating intermittently in the intervals between the formation of stitches."

Adjourned to new notice.

NEW YORK, *July* 12, 1881.

Parties meet pursuant to notice.
Present: Counsel as before.

Cross-examination of Mr. H. B. RENWICK by Mr. PLYMPTON:

8 X Q. You state that you have read reissued letters patent No. 9097, on which this suit was brought, several times, and believe that you understand it. You also refer to a part of its recital in your evidence and quote therefrom. I find in the reissue referred to, between the 95th and 100th fols. on the first page and ending at the 10th fol. on the second page, this statement: "I also have devised for the purpose of feeding conical strips of goods, such as the conical bodies of skirts or skirt borders, a feed device operating intermittingly between the formation of the stitches." Please state what you understand this part of the specification to mean in its relation to the invention of Mr. Beck, as you understand it.

A. I understand it to be a general statement of that part of his invention which relates to the feed mechanism, so constructed that it will feed one edge or side of the strip of goods faster than the other, and with a feed along the middle portion of the goods proportionally increasing from the feed of the slowest edge to the feed of the fastest edge.

55 9 X Q. Do you understand from the words which I have quoted from the reissue a feed device operating intermittingly between the formation of the stitches is an essential feature to the proper working of the Beck machine and of his invention?

A. I do not so understand from the words quoted, but I do know that with the Beck machine, constructed in the exact manner described in the patent, with needles which have no swinging motion in the direction of the feed—that it is essential that the feed should be intermittent.

10 X Q. Then do I understand you to say that the Beck machine, as it is described and shown in the reissue, would not be practically an operative machine for the purpose designed if the intermitting feature of the feed devices was omitted, or, in other words, if the feed was continuous?

A. Yes; that is so.

11 X Q. In the reissue referred to, between the 10th and 15th folios on the second page, is found this recital: "The feed device in which I have embodied this feature of my invention (referring to preceding statements) consists, as shown in the drawings, of feed-rollers H, which are made of conical shape and of such taper or relative diameters at their respective ends as to conform to the shape of the skirt or border to be quilted." State what you understand by the words "such taper or relative diameters at their respective ends as to conform to the shape of the skirt or border"—means?

A. The statement means that the rollers are to be conical, or rather frusta cones, so that the diameter of one end of the rollers will be greater than the other, and that the proportions between these diameters are to be varied according to the shape of the skirt to be quilted; for instance, if the skirt to be quilted would form, when made up, a very obtuse cone, then the large end of the roller would have to be of greater diameter in proportion to that of the smaller end than would be the case if the skirt to be made up formed a more acute cone.

12 X Q. Then, as you understand the reissue in question,
56 the conical feed-rolls in the Beck machine must have their
greater and lesser diameters proportioned to the angles of the
cones of the skirts that are to be quilted by it?

A. Yes.

13 X Q. So that these conical feed-rollers would necessarily have to be changed from time to time to correspond with the shape of the skirts to be sewed; is that your understanding of the Beck machine, as it is described and represented in the specification and drawings?

A. Yes; when different shapes of skirts were to be quilted on the same machine.

13 X Q. In the Wiese machines, or in one of them which you say you examined, did you find in addition to the up-and-down movement of the needles and the shogging motion, as you call it, that the needles themselves had a swinging motion.

A. Yes; in the machine which had the feed-rollers, as I have already stated.

14 X Q. In your judgment would this Wiese machine operate successfully without this swinging motion of the needles?

A. As far as I can remember, it would; the rollers were driven by two sets of pawls, each acting intermittently, and if one set were lifted the feed would be intermittent, and the swinging motion of the needles would be unnecessary.

15 X Q. In your judgment would this Wiese machine that we have referred to in the last question work to produce quilting patterns of given design if the needles had not the swinging motion?

A. I am not certain, but I think it will.

16 X Q. Please give your reasons for thinking that the Wiese machine referred to would operate as inquired of in the last question without the swinging motion of the needles.

A. Because the machine then would have in it needles without the swinging motion, the same as in the Beck machine specially described, and the feed would be intermittent, as in that machine.

57 17 X Q. Did the needles in any of the Wiese machines that you saw operate to feed the cloth wholly or in part?

A. They certainly did not in the machines with the four-motion feed; they may have culled in the other machine, but I don't know whether they did or not.

18 X Q. Did you or not consider the possible feeding operation of the needles in your answers on the direct examination?

A. So far as I remember, I did not.

19 X Q. Were the feed-rollers in the Wiese machine which had them, and which you saw, of the same diameter throughout?

A. I did not measure them; my impression is that they were; I should like here to state that I have not here before me the memoranda which I took on the day that I examined the machines, and also that, as far as I remember, all my answers in my direct examination were on the supposition that all the rollers of the Wiese machines were of the same diameter.

20 X Q. You state in your direct — that these feed-rollers practically, but not absolutely, revolved continuously; state whether you detected any intermission in the revolution of these feed-rollers, and when and how the intermitting motion took place.

A. I do not remember detecting any intermittent motion while the machine was in motion, and it would have been impossible to do so at the speed they ran, even if the motion had been intermittent; what I meant to convey by the language referred to was that, owing to the means of driving each shaft by two sets of pawls, *that* there must have been a time when the feed-rollers stopped momentarily, although its motion was practically continuous; if the feed-rollers had been moved by cogs, without the intervention of rachets, then the motion would have been absolutely continuous, as it was in the machine practically continuous.

21 X Q. Were your answers in your direct examination
58 based upon the supposition that the feed-rollers in the Wiese
machine referred to did not revolve with absolute continuity?

A. Yes; because that was the action of the machine, but the answers would have been the same if the motion had been absolutely continuous by the use of cog-wheels alone.

22 X Q. Did you make a careful and close examination of the Wiese machine referred to to determine whether the feed-rollers in

that machine moved at different degrees of speed in relation to each other?

A. Yes, as far as my memory serves me; Mr. Wiese quilted a conical piece of goods upon the machine in my presence with one edge or side of the goods moving faster than the other, which proved that the rollers at one edge of the goods had their feeding-points moved through greater distances during each stitch than the points of the rollers at the other edge. I think he also told me that the machine was capable of adjustment so that the relation between these two distances of movement might be varied so as to accommodate the machine to the quilting of skirts of varying obtuseness of cones.

23 X Q. Were your answers in your direct examination based on this proof—that some of the feed-rollers in the Wiese machine revolved faster than others?

A. Certainly; and I so stated that the long, rough rollers made more revolutions in a given time than the two short, rough rollers, which acted on the other side or edge of the goods.

24 X Q. And the statement which you have quoted from your direct — was based upon the proof you referred to just now, was it?

A. Yes; and upon the statements of Mr. Wiese himself, who I now remember told me that the long, rough roller moved at the greatest speed. I remember that there was some question about it when I was making my memorandum.

25 X Q. Did the rollers in the Wiese machine referred to extend continuously across the width of the goods that were being quilted as do the rollers in the Beck machine, shown and described in the reissue in suit?

59 A. No; I have already stated in my direct examination that there were gaps between the rollers in the Wiese machine.

26 X Q. Why did the swing of the needles render the practically continuous revolving of the feed-rollers possible, and would this swinging of the needles render the absolute continuous revolving of the feed movement possible?

A. Because the swinging of the needles permitted the cloth to be moved while the needles wore in the cloth as well as when they were out of it, and absolutely continuous revolving feed could have been operated under a proper adjustment of the swinging needles.

27 X Q. Without this swinging of the needles do you say that absolutely continuous revolving of the feed-roller would not be possible in a machine constructed as was that of Mr. Wiese?

A. Yes.

28 X Q. In this Wiese machine, which we are now talking about, how did the feed act intermittingly in the intervals between the formation of the stitches?

A. It acted to feed the cloth while the needles were out of the goods, and therefore between the formation of the stitches, and therefore intermittently so far as the motion of the cloth was concerned, while the needles were out of the cloth, but it also acted while the needles were in the cloth, and the motion of the cloth as a whole was practically continuous.

29 X Q. Is this intermitting action that you refer to in your last answer the same as the intermitting action described in the Beck machine, reissue 9097, in your opinion?

A. The patent has this statement in it: "They (the rollers) act intermittently, resting during the formation of the stitch and feeding the goods when the needles are out of the cloth." Now, the feed acts when the needles are out of the cloth in both machines, and the purpose of the feed in both machines is to draw the cloth
along when the needles are out of it, and the intermittent ac-
60 tion spoken of in the patent is, as I understand it, defined as
an action when the needles are out of the cloth; therefore
the feed-rollers of the Wiese machine operate in the same way as those of the Beck's, and at the same time, although the former have, in addition to this motion, a motion when the needles are in the cloth, this latter motion being rendered possible by the swinging of the needles.

30 X Q. Did you find in the Wiese machine that we are now talking about that the feed-rollers acted intermittently, resting during the formation of the stitches?

A. No; I have said many times and in my last answer that the motion of the roller in Wiese machines was practically continuous, and I will say further, as a corollary, that they have no practical period of rest.

31 X Q. Describe, if you please, the construction of the second machine referred to by you, and state how in that machine the feed device rested during the formation of the stitch and fed the goods when the needles were out of the cloth.

A. I have already described that machine in my direct examination, and the feed device rested when the needles were in the cloth—that is, rested from feeding and feed the goods while the needles were out of the cloth in exactly the same way as any four-motion feed in use does.

32 X Q. Wherein did you discover that this four-motion feed-machine operated practically the same as the Beck machine described in the reissue in question?

A. I discovered it from the statement of Mr. Wiese himself that the machine could be so operated as to feed one edge of the goods faster than the other, thus having the same mode of operation as the Beck machine; and I have stated already in my direct examination that four-motion feeds and roller feeds were known substitutes for each other prior to the date of the Beck invention.

33 X Q. From this statement made by Mr. Wiese that his four-motion feed-machine could be adjusted to feed faster at one edge of the goods than the other, were you led to make your statements in
the direct —, referring to that machine?

61 A. Yes, and also from an examination of the machine my-
self and its adjustment, which proved that it could be so adjusted and was constructed for the express purpose of being so adjusted.

34 X Q. Did you see it adjusted to feed faster at one edge of the cloth than the other or was it feeding the cloth through straight?

A. The one of the four-motion feed-machines that I saw in operation was so adjusted to — feed the cloth straight, as I have already stated.

Adjourned to July 13, 1881, at 2 p. m.

NEW YORK, *July* 14, 1881.

Parties met pursuant to notice.

Present: Mr. Wetmore, counsel for complainant, and Mr. Plympton, counsel for defendant.

35 X Q. Referring to the second machine which you saw at Wiese's place, did you see the feed altered or adjusted so that one edge of the cloth when passing through the machine would pass at a greater speed than would the other edge or did you see it feeding straight only?

A. Straight only; that is my impression.

36 X Q. What knowledge have you that enabled you to state with certainty that the feed of this second machine could be adjusted to feed the two edges of the cloth at different degrees of speed?

A. Examination of the construction of the machine and Mr. Wiese's statement to me.

62 37 X Q. What did this examination of the second machine disclose that enables you to make that statement with certainty?

A. It disclosed that all four or five feeds were moved by one reciprocating bar, and that there were adjustments in the machine which I have referred to in my direct —, by means of which one end of this long bar could be made to move through a greater distance than the other end, thus feeding one edge of the goods through a greater distance than the other edge.

38 X Q. Did you operate these adjusting devices?

A. I do not remember doing so.

39 X Q. Did you see them operated?

A. Not that I remember.

40 X Q. Were the feeding devices in the second machine continuously or intermittent?

A. Intermittent, as all four-motion feeds are.

41 X Q. Do you wish to be understood as saying in your last answer that the four-motion feed in the second machine was intermittent to the extent as well as the same way as all four-motion feeds are?

A. Yes, by intermittent I mean that the rough surface takes hold of the cloth, moves or feeds it, then drops away from the cloth, retreats out of contact with the cloth, rises to take hold of it, and then moves to force the cloth forward a second time, there thus being an intermission between each feeding movement of the four-motion feed surface, viz., during the time that the feed is leaving the cloth, when it is retreating, and when it is moving upward to take hold of the cloth again.

42 X Q. Do you state that this was precisely the operation and extent of the feed in the second machine?

A. Yes.

43 X Q. Did you see either the first or second Wiese machine feed or quilt in curved lines, parallel to the top and bottom curves of the garment passing through the machine?

A. I think I saw the first one—the roller one—but I am not certain. I saw the second one feed in curved lines, by reason of a drag being put upon one edge or end of the cloth, although the 63 feeds, as Mr. Wiese stated, all fed the same distance, but the curves were, as far as I discovered, not regular, as the curvature depended upon the skill of the operation and not on the adjustment of the feeding devices of the machine.

44 X Q. A machine that will quilt in lines parallel to the top and bottom of the skirt by the skill of the operator when the feeding devices were not conical, and all move at a uniform speed, would not, in your judgment, infringe the reissue patent in question, would it?

A. It might or it might not; if all the feeding devices, although moving at the same speed, move through different distances for each stitch, it would certainly infringe, or it would infringe even if they moved through the same distances only, in case the machines were so constructed that by means of proper adjustment it could feed the cloth through a greater distance at one edge than at the other edge.

Adjourned to new notice.

64 U. S. Circuit Court, Southern District of New York.

LOUIS DRYFOOS *against* WILLIAM WIESE.

Testimony taken in rebuttal on behalf of the complainant, before John H. Ives, special examiner, under and pursuant to the 67th equity rule as amended.

NEW YORK, *May* 10*th*, 1882.

Parties meet pursuant to adjournment.
Present: Counsel as before.

CLARA MUNDT, a witness produced on behalf of the complainant, being duly sworn and examined, in answer to interrogatories propounded by Mr. Wetmore, says:

1 Q. What is your name, age, residence, and occupation?

A. Clara Mundt; 102 E. Eighth St.; 18 years of age; operator on quilting machines.

2 Q. Were you ever employed at Mr. Weise's establishment in Hudson St.? And, if so, please state how long you worked there and what you did while there.

A. I cannot say exactly whether it is three seasons or four seasons that I worked there. I worked on the quilting-machine and four-needle machine, and I have done mending on a Singer machine.

65 Witness asks the question:

Does Mr. Dryfoos intend to give me steady work after this at the rate of $7½ a week?

Counsel for complainant states, and desires the examiner to read the statement to the witness, that she is required to testify in the matter concerning which she is interrogated in exact accordance to the truth, and that neither Mr. Dryfoos nor any other person can promise any reward for so doing, and that certain interrogatories will be put, to which she is asked under oath to give answers as far as her knowledge extends; and, further, the examiner is asked to instruct the witness, while under examination, that she will please confine herself either to answering or declining to answer the questions that may be put to her.

The witness states that she cannot answer to-day; I am sick.
Examination of the witness suspended.

HENRY B. RENWICK, being recalled in rebuttal on behalf of complainant, in answer to interrogatories propounded by Mr. WETMORE, states:

1 Q. Please look at the model herewith shown you and state whether or not the same illustrates the mode of operation of the four-motion quilting-machine which you examined at Mr. Weise's and concerning which you have testified.

66 A. It does; the model is not exact, as I had no opportunity to make drawings of the machine, and I see that the model-maker, although told by me to put in cams to move the levers which move the feed-dogs, has put in eccentrics in their place, and has also put in a long eccentric to lift and lower the four-motion feed surfaces, but the model still fairly represents the manner in which the feed-dogs are moved forward and backward and up and down, and also the movable fulcra of the levers by means of which the length of feed can be altered and the feed made to move through a greater distance at one end than at the other end of the machine; the model, of course, is not an exact copy of the machine, but illustrates its construction and the way in which it works, so far as the feed is concerned.

Defendant's counsel objects to the use of the model referred to by the witness Renwick in connection with any testimony he may give in this suit, as it appears from his statement that the model is not exact and is besides modified in its construction.

Model offered in evidence and marked Complainant's Exhibit Illustrated Model Four-Motion Feed.

Introduction of the model is objected to by defendant's counsel for the reasons above given, and as immaterial and as tending to mislead the court.

2 Q. Have you read the testimony of Mr. J. Boyd Elliott in this case?

A. I have.

3 Q. Do you understand the theory expressed by Mr. Elliott in that testimony tending to show, as he in effect states, that the said four-motion feed-machine is incapable of feeding faster on one side of a strip of goods passing through the machine than at the other side? 67

A. I understand him to state that the feed would jam if forced to feed faster at one end than the other, although I do not understand him to say that he has actually tried the experiment with the machine.

4 Q. Please state whether or not you agree with the statement that the alleged jamming would interfere with the increased feed motion at one side, and give your reasons for any answer you may make.

A. I do not agree with Mr. Elliott in his opinion. I have counted the stitches in a quilted petticoat this morning at the short or concave edge thereof and at the long or convex edge thereof. I find that there are 20 stitches in each complete wave at both ends. The average length of the complete wave on the concave edge of the petticoat is 1 and $\frac{1}{16}$ inch or $\frac{17}{16}$ inches. The average length of a complete wave at the convex end of the petticoat is 1 and $\frac{5}{16}$ of an inch scant or $\frac{21}{16}$ inches. The difference of the length of 20 stitches is, therefore, $\frac{4}{16}$ of an inch. The difference of the length of stitches in order to quilt that petticoat was, therefore, $\frac{1}{80}$ of an inch for each stitch—that is, the feed at one end would have to move $\frac{1}{80}$ of an inch further than the feed at the other end. In this petticoat the average length from the row of stitches on the concave side to the row of stitches near the convex side was 13$\frac{3}{8}$ inches. Now, if the machine was so adjusted as to feed $\frac{1}{80}$th of an inch faster at one edge than at the other the rod or shaft to which the feed-dogs are attached would move at one end $\frac{1}{80}$th of an inch further than the other, and the end nearest the shortest moving feed might be prolonged and fastened to a vertical pivot and would turn on that pivot as it was moved by the two cams, just in the same way as if that pivot was not there, because the shaft, moving at one end faster than the other, moves as a radius moves when describing a circle.

I find by calculation that this radius would be six feet
68 long from the fastest-moving feed-dog to the centre on which
the radius turned, which would describe a circle of 12 feet in diameter. Now, if the machine were constructed with mathematical accuracy and without play, which it is not (and if it were constructed with mathematical accuracy there would be greater chance of binding or jamming of the dogs), the outer feed-dog, which is the one which it is supposed would jam, and which would certainly be the most likely to jam, moves through only $\frac{1}{16}$ plus $\frac{1}{80}$ of an inch in an arc of a circle which is twelve feet in diameter, and it is clear that such a short arc of such a large circle would be so near a straight line that no ordinary work in a sewing-machine would make the feed-dog jam.

5 Q. Will you please state whether the skirt now shown you is the one you measured, or conforms to the measurement stated in your last answer?

A. I think this is the one, although the skirts lying about the room have been mixed since I measured them.

Skirt referred to offered in evidence and marked Complainant's Exhibit "Specimen Conical Quilted Skirt."

6 Q. Please look at the two models herewith produced and shown you and state whether or not the same illustrate the operation of the defendant's roller quilting-machine and the machine with the conical rollers, more particularly described in reissue 9097 in suit.

A. The brass model represents a feeding apparatus and the sidewise shogging apparatus of the needles of the machine of reissue No. 9097. The model on the wooden table illustrates the operation of defendant's roller quilting-machine. In this last model the pawls for giving the intermittent motion to the feed are represented as moved by cranks. In the machine, if I remember right, the 69 pawls were moved by eccentrics. This change makes not the slightest difference in the operation of the machine, because the motion given by eccentrics is exactly the same as that given by a crank, and an eccentric is, in fact, nothing more than a large crank-pin.

All reference by this witness to the wooden model referred to in the last answer is objected to for the reason that from his statement it is not an exact model of the defendant's roller machine, and for the further reason that the mechanism for imparting a continuous motion to the feeding devices is omitted and a substitute made to produce an intermittent motion. The model, therefore, in its present state would tend to mislead the court.

Models offered in evidence and marked, respectively, Illustrated Model Machine with Conical Roller Feed and Illustrated Model Defendant's Roller Feed-Machine.

Introduction of this wooden model in evidence is objected to for the reasons above given, and the introduction of the brass model is objected to as not the best evidence, it not being shown that an actual operating machine made after the reissue in suit cannot be obtained.

7 Q. In your former examination you stated that the feed of the defendant's roller quilting-machine was not absolutely continuous, which statement has since been disputed. Will you please again state, a little more fully, why the said feed is not absolutely 70 continuous, and especially please state whether it would make any difference in that respect that "before one pawl," as stated by Mr. Elliott, "ceases its operation in turning the feed-roll shaft the other pawl begins to feed?"

A. It is absolutely impossible to get a continuous feed from two pawls moved either by eccentrics or cranks. If the cranks are placed at 180 degrees apart, or the eccentrics are placed in the same angular position, and this is the best position in which they can be placed, then one pawl must cease going forward and the other cease going backward at the same time, both coming to a dead stop, at which time the ratchet-wheels also must stop. In addition to this, the pawl which is going backward must get a little behind the tooth of the ratchet-wheel before it drops, and cannot commence to move the ratchet-wheel until it moves far enough forward to bear against the ratchet-tooth. There must, therefore, be two dead stops in the motion of the feeding-rollers to each revolution of the crank or eccentric shaft. I produce a pasteboard sort of model which will illustrate

this statement. In this model the line z represents the line in which the ends of the pawls move, although they in fact move in the arc of a circle; but this makes no difference in the result. The pin through the paper disc represents the eccentric or cam shaft, and the disc has on it two small circles, a and b, which represent two crank-pins at 180 degrees apart. I suppose the crank-pin to move in the direction of the arrow, but it may move in the other direction with precisely the same result. When the line x on the disc is opposite the point y on the paper the two crank-pins will be on dead centres, and neither will be operating on the pawl to turn the ratchet-wheel, and before the pawl attached to a can turn the ratchet-wheel the shaft must move far enough to take up the slack, during which time the feed must stand at rest. Now if it be desired to make both pawls feed at the same time, the crank-pin or eccentric a must
71 be shifted to a'. Now if the shaft be turned so that the line
x on the disc is opposite the line v on the paper, thus it will be seen that both pawls are feeding at once, so that when the shaft is about in that position there would be no interruption in the feeding when the pawl attached to b stopped on dead centres; but if the motion of the shaft be further continued until the line w on the disc arrives at the line v on the paper it will be seen that the pawls attached to both a' and b are going backward at the same time, and the feed-wheel must stand still until the line w on the disc has passed by the point y on the paper. If the difficulty be cured in one-half of a revolution in the manner I have shown it is exaggerated just so much at the other half of the revolution. Two cranks or two eccentrics cannot feed continuously, and three cranks or three eccentrics acting through a pawl are necessary for continuous feeding.

All of the foregoing answer is objected to as immaterial.

Adjourned to May 11, 1882, at 10½ o'clock.

New York, *May* 11, 1882.

Parties met pursuant to adjournment.
Present: Counsel as before.

Wm. S. Taylor, a witness produced on behalf of the complainant in rebuttal, being duly sworn and examined, testified as follows:

72 1 Q. What is your name, age, residence, and occupation?

A. William S. Taylor; age, 53; occupation, manufacturer of felt goods, cloths; residence, 104 Fort Greene Place, Brooklyn.

2 Q. What experience have you had in respect to quilted goods which have been introduced into the market for a number of years past? And please state what opportunities, if any, you have had for knowing what kind of quilted goods have been thus introduced, and state how many years back your experience extends.

A. Prior to the fall of 1877 I made quilted skirts with the ordinary sewing-machine. In the fall of that year, 1877, L. Dryfoos & Co. introduced a quilted skirt made by a machine with a number of needles. That stopped my manufacture of those goods, as I could not compete with those goods, the prices, the workmanship. There have been other parties making these goods on machines with a number of needles, and up to two years ago I used to have a few made, but not to any extent.

3 Q. Who was the first person of whom you have any knowledge that introduced into the market skirts with conical quiltings substantially like the skirt here shown you?

A. Mrs. Brown.

4 Q. Who was the first person, so far as you know, that introduced such skirts quilted in the piece done on multiple needle machines?

A. I think the same person, so far as I know.

5 Q. When did you first see the skirt made by Mr. Dryfoos?

A. In the fall of 1877. I should have answered that previous question differently.

6 Q. Please make any explanations you desire.

A. The first person that I know of introducing these goods was L. Dryfoos & Co.

7 Q. What were the Mrs. Brown's skirts to which you refer, and where were they made?

73 A. Well, Mrs. Brown was the first person who made them for me and made them at her residence.

8 Q. What opportunities have you had for knowing the different kinds of quilted skirts that have been introduced by different manufacturers into this market since you have been in business?

A. I have had opportunities of seeing these goods made by a number of people.

Cross-examination by Mr. Plympton:

9 X Q. Where is your place of business at the present time, and where has it been since 1877?

A. For a number of years in Front street, Brooklyn; then for two years on Atlantic avenue, Brooklyn; then for two years in Pearl street, New York; then, in the fall of 1881, I sold out the skirt business to a Mr. Burns.

10 X Q. Were you located in business anywhere near Mr. L. Dryfoos?

A. Yes; for a number of years. I am now in Thomas street. I have been in Thomas street five years, which is one block from Worth street, in which L. Dryfoos & Co. have their place of business, and their factory is in Thomas street.

11 X Q. Did you have business relations with Mr. Dryfoos in the interval from 1877 to the present time? If yes, state what.

A. Yes; for some four years I have sold them felt cloths for manufacturing purposes; four years from the present day back.

12 X Q. And Dryfoos sold you quilted goods while you were in the quilting business?

A. No, sir.

13 X Q. Did you buy quilted goods of Mr. Dryfoos?

A. No, sir.

14 X Q. When did you go out of the quilting business?

A. To the best of my recollection, in 1878.

74 15 X Q. How extensive was your quilting business? Was it a large or a small business?

A. A small business.

W. S. TAYLOR.

Attest: JOHN H. IVES.

WILLIAM BAIRDAIN, a witness produced on behalf of the complainant in rebuttal, being duly sworn and examined, testifies as follows:

1 Q. What is your name, age, residence, and occupation?

A. William Bairdain; residence, 346 McDonough St., Brooklyn; age, 54; occupation, clerk.

2 Q. Please state what experience you have made in seeing the quilted goods introduced into the market, and state how far back your experience extends.

A. I had the opportunity of seeing nearly all the quilted goods introduced by leading manufacturers in New York, having been a buyer for a house using large quantities of those goods. I sought out the different makers of the goods. The house that I represented at that time was Mills & Gibbs, 408 & 410 Broadway.

3 Q. Please look at the skirt Complainant's Exhibit Specimen Conical Skirt, and state, if you please, who was the first person to your knowledge to introduce that kind of skirt into the market.

A. I cannot say that I ever saw this skirt before seeing it in the hands of Louis Dryfoos. I may have seen it, but am not aware of the fact.

4 Q. What year was that?

A. 1877.

75 5 Q. How long had you at that time had experience as a buyer of this kind of goods?

A. That was my first year.

6 Q. What did you do at that time in reference to finding out what kind of goods of that kind there were offered in the market?

A. I went to the leading manufacturers of this class of goods; looked at their goods and their place of business; had their samples sent in to my place of business; compared the goods one with the other.

Cross-examined by Mr. PLYMPTON:

7 X Q. When did you cease to be a buyer of quilted goods?

A. 1879. I want to correct that; I think it was the fall of 1878.

8 X Q. You were then buyer of that class of goods for one year?

A. One year for that house. I was really two years buying that class of goods; I mean I bought these goods in the fall of 1877 and the fall of 1878, and at no other time.

9 X Q. And you fix 1877 as the first within your recollection that you saw skirts like this specimen skirt, because it was your first year in that line of business?

A. That is so.

10 X Q. Do you remember, in 1877 or 1878, to have seen conical skirt bodies that had been quilted by a single needle machine?

A. I have seen them both years.

11 X Q. They were in open market in those times?

A. Yes.

12 X Q. State whether you bought quilted skirts during your experience from any other house than that of L. Dryfoos & Co.

A. Several others.

76 13 X Q. During the two years of your experience?

A. Yes, sir.

14 X Q. And were such conical skirt bodies that you bought of other parties sewed on machines having multiple needles?

A. They were not, so far as I could judge.

15 X Q. Can you state certainly whether they were or not?

A. I cannot, not being the manufacturer.

16 X Q. Were L. Dryfoos & Co. the first persons you bought conical quilted skirt bodies from in 1877?

A. They were.

17 X Q. Were these skirt bodies that you first bought from them sewed with one or more needles? State positively, if you can, on this point.

A. According to my judgment they were sewed with a number of needles, and not with a single needle.

18 X Q. Will you state positively whether these skirts you bought from Dryfoos in 1877 were sewed with a single needle or more than one needle?

A. I cannot state it positively; I can only judge it by the work.

19 X Q. The work had that appearance, had it?

A. Had that appearance; yes, sir.

WM. BAIRDAIN.

Attest: JOHN H. IVES.

Louis Dryfoos, a witness produced for the complainant in rebuttal, being duly sworn, testifies as follows:

1 Q. What is your name, age, residence, and occupation?

77 A. Louis Dryfoos; age, between 45 and 46; residence, New York city; manufacturer of skirts.

2 Q. Please state how long you have been in business as a manufacturer of skirts, and where?

A. I have been a manufacturer of skirts since 1866, and carried on the business in the city of New York during that time.

3 Q. Are you the complainant in this case?

A. I am.

4 Q. Have you manufactured and sold quilted goods quilted upon the Beck machine described and shown in the patent in said reissue No. 9097?

A. I have.

5 Q. When did you first put those goods upon the market?

A. In the fall of 1877, but may have sold some prior, which I will have to look up more distinctly, which I cannot remember—which is to say, that when I say the fall of 1877 the sales begin in the month of July.

6 Q. Please state whether Complainant's Exhibit Specimen Skirt, and also the other specimen skirt herewith shown you, are samples of goods made on said machines by you—such as you have been selling?

A. They are such goods, which have been made on this patented machine.

Sample skirt offered in evidence and marked Complainant's Exhibit Specimen Skirt No. 2. J. H. I., special examiner.

7 Q. Were you acquainted with the quilted goods in the market prior to the goods spoken of made upon the Beck machine?

A. I was.

8 Q. Will you please state the differences, if any, between said quilted goods made on the Beck machine and the quilted goods made and sold before the introduction of the said Beck quiltings?

78 A. Before the introduction of our patented machine there were very few quilted goods in number sold, for the reason that to be made by one single needle they would be too expensive, and in case we would have large orders for selling them we could not execute the orders. The goods which are quilted by one needle have in most cases to have the patterns stamped upon them and the operator has to follow that mark, whereas on the patented quilting-machine the goods or the bottom of the skirt is cut in the conical form and passes through the machine and by that each and every skirt will come out alike.

9 Q. In point of regularity of workmanship, how do the conical quiltings made upon the Beck machine compare with those made before the Beck machine?

A. If quilting is done by a machine with one needle without the pattern being stamped in advance, it could never be done as perfect as on the patented machine.

10 Q. In point of price, how do the goods made on the Beck machine compare with those made before that time?

A. The Beck machine is a saving in labor over 80 per cent. against the one-needle machine, which was customary before that machine.

11 Q. What, if you know, has been about the number of those skirts sold in this market since your introduction of them up to the present time?

A. I believe the sales of this class of quilting must be over 100,000 dozen.

12 Q. Prior to the fall of 1878 were these goods manufactured or sold to your knowledge by any other person than yourself?

A. They were not.

13 Q. Something has been stated by Mr. Wiese in reference to negotiations for a settlement of this suit; please state who first spoke about the matter of settling the said suit?

79 A. In the fall of 1881 Mr. Wiese had been employed by L. Dryfoos & Co. for quilting skirts. During the time he called at my office at the factory and we had some casual conversa-

tion, by which he said: "This litigation has already cost me a good deal of money. Why don't you push the others, and don't let me bear the whole brunt?" I said: "All right, I will go ahead on the others and ease up with you for a while," and shortly afterwards he and I came to the conclusion to make a stock company out of the quilting business; let him manage it and I would give him 22½ per cent. profit, to which he at the time agreed, with the condition that he give me a decree for my patent, A.

Q. Mr. Wiese has stated that the work done on his machines is better than the work done on the conical roller machines, like the model—Complainant's Exhibit "Illustrated Model Machine with Conical Roller Feed," done at your establishment. How do the goods quilted by you and quilted by Mr. Wiese compare in point of fact?

A. I think our work is done superior, more regular.

Cross-examination by Mr. Plympton:

14 X Q. Has this reissue, 9097, ever been sustained in the courts upon full trial and argument in the other cases you refer to?

A. What cases.

15 X Q. In any case.

A. No suit outside of mine; two other parties, one the Standard Quilting Company, the other Monroe P. Wilkins, they confessed to me that they don't see any chance of beating our patent, and offered that we should take a decree against them.

16 X Q. And by their consent you did so?

A. Yes, sir.

80 17 X Q. And these were the only suits that you have brought under reissue No. 9097, are they?

A. They are.

18 X Q. Before you bought the Beck patent in suit what was your business?

A. The same business that I am engaged in now—skirt manufacturer.

19 X Q. And that had been your business how many years before the Beck patent?

A. I stated at the outset that I am engaged in the skirt business since 1866; we had in our business since 1870 or 1871 a machine-shop where we employed the inventor, August Beck, at a salary by the year, and he invented the machine while he was employed by us, respectively, L. Dryfoos & Co.

20 X Q. When did you buy the Beck patent?

A. As I am unprepared just now, on my memory I could not so exactly rely as to the date; I could not state positively when.

21 X Q. Did you buy the Beck patent shortly after the original patent issued?

A. I think so, or I may have had the assignment already when the application was made; I don't know.

22 X Q. Now, from the year 1866, the time when you first went into the skirt business, up to the time you purchased the Beck patent, you say you followed the same business—that is, manufacturing and selling skirts. During that period I suppose you adopted every

means in your power to build up and enrich your business, didn't you?

A. I adopted every honorable means to build up my business.

23 X Q. And succeeded in increasing it until it has grown to its present proportions, I suppose?

A. I did, with the help of my brother.

Redirect:

81 24 R. D. Q. Have you brought suits under your reissue No. 9097 against every person known to you who had in their possession for use a machine which you were advised infringed the said reissue?

A. I have.

25 R. D. Q. And have all of those suits, with the exception of the suit against Mr. Wiese, the present defendant, terminated by an injunction being issued against the defendant by the defendant's taking a license or giving up the business?

A. Mr. Wilkins, who is one, has acknowledged our patent and has an injunction against him, I believe, and is willing to take a license. The Standard Quilting Co. have also acknowledged our patent and have taken a license.

26 R. D. Q. Was there not another suit against York and others, and what has become of that suit?

A. York, as I was told, sold his machines to a party who I was told did not work them, and as he did not work upon the machines we did not want to incur any further expenses and discontinued.

L. DRYFOOS.

Attest: JOHN H. IVES.

Examination adjourned to May 12, at 12 o'clock.

Examination further adjourned to May 18.

82 NEW YORK, *May* 18, 1882.

Parties met pursuant to adjournment.

Present: Counsel as before.

Cross-examination of H. B. RENWICK by Mr. PLYMPTON:

8 X Q. You remember the machines that you saw in Wiese's place in Hudson street perfectly at this time?

A. No; not in all respects nor in all precise details; only so far as I have testified.

9 X Q. Did you remember the Wiese machine in all respects and details at the time you caused to be made the two wooden models referred to in your last examination?

A. No; not further than stated in the last answer, and I was guided by a memorandum made on the day of the visit to Mr. Wiese, but this memorandum and the sketches with it did not refer to all the parts of the machine and the details thereof.

10 X Q. Please state what parts of the machines you did remember at the time you caused the two wooden models referred to to be made.

A. The feed-machines, embracing the rolls and pawls, in one machine, and the four-motion feed-dogs and their actuating mechanism in the other machine, but I should state that I had no measurement except of the rolls in the roller feed-machine.

11 X Q. Will you state now that this wooden model represents the four-motion feed of Wiese, so far as the feed-dogs and the levers which actuate them and the attachment of these actuating levers to the operating rod are concerned?

83 A. I do not profess to state, as I stated before, that the model is exactly accurate, but only substantially represents the mode of operation of the parts; I do remember that the two ends of the rod which carries the feed-dogs were loose in the upper end of the two actuating levers; I do not remember how the feed-dogs or their tails, which may be called levers, were secured to this rod.

12 X Q. What do you understand the feed-dogs to be, in the wooden model referred to, of the four-motion feed?

A. The rough surfaces which project through holes in the cloth plate or table and the long tails attached to these surfaces, which lie under the table and have their ends connected to the vibrating rod which lies under the table.

13 X Q. And you cannot say, if I understand you rightly, whether this wooden model truthfully represents the way that the long tails of the feed-dogs were attached to the rod you mentioned in the Wiese four-motion feed-machine.

A. I cannot say that it represents the precise mode of attachment; I do remember that the attachment was such that the dogs reciprocated when the rod was reciprocated.

14 X Q. Does the wooden models of the four-motion feed-machine accurately represent the length of the rollers which press the goods upon the rough surface feeds of the Wiese machine?

A. I cannot say; all that I remember is that there was a roller for each rough surface feed.

15 X Q. Did the Wiese four-motion feed-machine have the same mechanical device or devices for connecting the two cam-shafts as is shown in the wooden model?

A. I don't remember; all I do remember is that there was some contrivance in the machine by means of which the two shafts were made to revolve simultaneously.

16 X Q. Now, concerning the roller feed machine, is your present recollection clear concerning the construction and operation of the Wiese roller feed machine?

84 A. Perfectly clear as to the rollers; as to the way in which they were mounted on their shaft and with reference to each other and to the fact that they were driven by pawls through the intervention of cog gear, but I don't remember exactly how the pawls were actuated, nor the size of the gear or ratchet-wheels, although my memorandum does show the size and relative arrangement of the rollers themselves.

17 X Q. Does the wooden exhibit of the roller machine that was introduced at the last meeting represent the detailed construction

and operation the Wiese roller feed machine, as you now remember it?

A. As I said before, I can't tell whether it is accurate in regard to the device for moving the pawls or to the size of the ratchet or gear wheel. And I also cannot say whether it is precisely accurate in the mechanism for holding down the upper rollers upon the lower one, although there was a mechanism in the machine for performing this duty.

18 X Q. Will you say that the wooden exhibit of the roller machine referred to truthfully represents the operation of the feed-rollers of the Wiese roller feed machine?

A. Yes, so far as my memory serves me, although the details of mechanism before referred to by me, may be erroneous.

19 X Q. Do you say that the rollers in the wooden model of the roller machine travel in the same way that the rollers in the Wiese machine travel, your attention being called to the fact that the feed-rollers in the wooden model have an intermittent motion?

A. As I said before in my *prima-facie* examination, my memory of the motion of those rollers in the Wiese machine was that they revolved practically, though not absolutely, continuously, and this is the way in which the feed-rollers of the model are revolved.

20 X Q. Please answer the last question directly.

85 A. I think I have, but will try again. My recollection is that the rollers in the wooden machine travel the same way as the rollers did in the Wiese machine.

21 X Q. Will you state positively that the intermittent action of the rollers in the wooden model is the same as the action of the feed-rollers in the Wiese machine?

A. I can't state positively, as I have not the Wiese machine before me; I can only state to the best of my recollection, and that I have already done.

22 X Q. State whether the rollers shown in the wooden model referred to are arranged in the same manner, and whether they are the same number as in the Wiese roller feed machine.

A. My memorandum shows that the lower rollers, which actually do the feeding, are the same in number in the model and arranged substantially in the same way that they are in the Wiese machine, and that the long roller at one end and the two shorter rollers at the other end are rough-surfaced, while the intermediate rollers are smooth-surfaced in the model as in the Wiese machine. The memorandum does not give me the number of the upper rollers, but merely states in substance that they are upper rollers loose on their shaft as in the model and pressed against the feeding-rollers by springs.

23 X Q. Is the arrangement of the feed-rollers in the wooden model, in their relation to the cloth-plate, the same as the arrangement you discovered in the Wiese roller feed machine?

—. I can't say; the memorandum does not give the exact position of the cloth-plate with reference to the feed-rollers.

24 X Q. Now, can you say positively that the arrangement and number of the feed-rollers in the wooden model are the same as in the Wiese feed roller machine?

A. No, I can't with reference to the upper rollers, but I can with reference to the lower ones.

86 25 X Q. What is the difference in mechanics between an eccentric and an eccentric cam?

A. As I understand it, they are the same; they are both circular disks mounted on revolving shafts, the shafts not passing through the centre of the circular disks. Their mode of operation in converting rotary into reciprocating motion is the same.

26 X Q. Is the mode of operation of an eccentric and an eccentric cam the same under all circumstances, so far as you know?

A. So far as I remember, yes, except when the cam is not permitted to act upon a lever throughout its whole revolution; in that case the lever has not the full throw of the cam or the eccentric, but would stand still at times while the eccentric cam was moving.

27 X Q. Did you cause or direct to be made the two wooden models of the roller and four-motion feed-machine?

A. My impression is that I did not, but I saw the four-motion model before it was finished and gave the maker some directions about it which he did not exactly follow. I cannot remember what I said to the maker exactly, but do remember telling him that he had better connect the two crank-shafts by means of crank-pins and connecting-rods. So far as I know, they were constructed from my memorandum made the day I was at Mr. Wiese's factory.

28 X Q. It now appears from your testimony, if I understand you correctly, that neither the roller nor the four-motion feed wooden models are made in accordance with the two classes of defendant's machine. What, in your opinion, do these two wooden models represent and what purpose do they serve?

A. It has throughout appeared from my testimony that these models do not exactly represent the two classes of defendant's machines. They do represent, so far as my recollection serves me, substantially the construction and mode of operation of those machines, the details differing as I have described. They were built, as I understand it, for illustrating to the court the mode of operation of the machines and to enable the court to understand better my testimony in the *prima facie* case, and I hope they will serve that purpose.

87 29 X Q. Do the two wooden models referred to represent the process of operation of the machine claimed in reissue 9097?

A. Yes; so far as the feed is concerned, in my opinion.

30 X Q. And is it also your opinion, so far as you can judge, that the two wooden models were made for the purpose of illustrating the process of operation of the machine claimed in reissue 9097 in suit?

A. No; they were made for the purpose of illustrating the construction and operation of the Wiese machine. The brass model put in evidence in this case during my direct evidence in rebuttal was made to illustrate the machine of reissue 9097.

31 X Q. Then, in your judgment, the inaccuracies in the construction of the two wooden models is immaterial so long as they represent the process of operation of the defendant's machines?

A. Yes; so long as they represent substantially the construction and mode of operation of the defendant's machine.

HENRY B. RENWICK.

Attest: JOHN H. IVES,
Special Examiner.

Correction of Record.

The record herein is hereby corrected by insertion in the 47th page thereof the following:

"Pasteboard model introduced in evidence and marked 'Compl't's Ex. Pasteboard Model.'"

"Patent introduced in evidence and marked 'Compl't's Ex. Reissue 9097.'"

This consent to the foregoing correction of the record and the filing of the same is given as of a date corresponding to the first meeting at which the pasteboard exhibit and the patent No. 9097 is referred to.

Dated January 13, 1882.

G. M. PLYMPTON,
Def't's Sol'r.

(Endorsed:) U. S. circuit court, south. dist. of New York. Louis Dryfoos *vs.* William Wiese. Stipulation. Wetmore & Jenner, compl't's sol'rs, 206 Broadway, N. Y. U. S. circuit court. Filed April 14, 1883. Timothy Griffith, clerk.

88 COMPLAINANT'S EXHIBIT REISSUE 9097.

(2–175.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the reissue letters patent granted Louis Dryfoos, February 24, 1880, No. 9097, for improvement in quilting-machines.

In testimony whereof I, E. M. Marble, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this third day of February, in the year of our Lord one thousand eight hundred and eighty-one, and of the Independence of the United States the one hundred and fifth.

[SEAL.]

E. M. MARBLE,
Commissioner.

Reissue No. 9097.

THE UNITED STATES OF AMERICA.

To all to whom these presents shall come:

Whereas August Beck, of New York, New York, assignor by mesne assignments to Louis Dryfoos, has presented to the Commissioner of Patents a petition praying for the reissue of letters patent for an alleged new and useful improvement in quilting-machines, for which letters patent were issued to said Louis Dryfoos and Joseph Dryfoos, dated May 1, 1877, the same surrendered and new
89 letters issued to them dated January 29, 1878, which last let-
ters having been surrendered, the same have been cancelled, and new letters ordered to issue to said assignee on an amended specification, a description of which invention is contained in the specification, of which a copy is hereunto annexed and made a part hereof, and has complied with the various requirements of law in such cases made and provided; and

Whereas upon due examination made the said claimant is adjudged to be justly entitled to a patent under the law:

Now, therefore, these letters patent are to grant unto the said Louis Dryfoos, his heirs or assigns, for the term of seventeen years from the first day of May, one thousand eight hundred and seventy-seven, the exclusive right to make, use, and vend the said invention throughout the United States and the territories thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the city of Washington, this twenty-fourth day of February, in the year of our Lord one thousand eight hundred and eighty, and of the Independence of the United States of America the one hundred and fourth.

[SEAL.] A. BELL,
Acting Secretary of the Interior.

Countersigned:
H. E. PAINE,
Commissioner of Patents.

(Here follow diagrams marked pp. 90 and 91.)

92 UNITED STATES PATENT OFFICE.

AUGUST BECK, of New York, N. Y., assignor, by mesne assignments, to Louis Dryfoos.

Quilting-Machine.

Specification forming part of reissued letters patent No. 9097, dated February 24, 1880. Original No. 190,184, dated May 1, 1877; reissue No. 8063, dated January 29, 1878; application for reissue filed January 24, 1880.

To all whom it may concern:

Be it known that I, August Beck, of the city, county, and State of New York, have invented certain new and useful improvements in quilting-machines, of which the following is a specification:

The machine to which my invention relates is a sewing-machine

2 Sheets—Sheet 1.

A. BECK,

Assignor, by mesne assignments, to L. DRYFOOS.

Quilting-Machine.

No. 9,097. **Reissued Feb. 24, 1880.**

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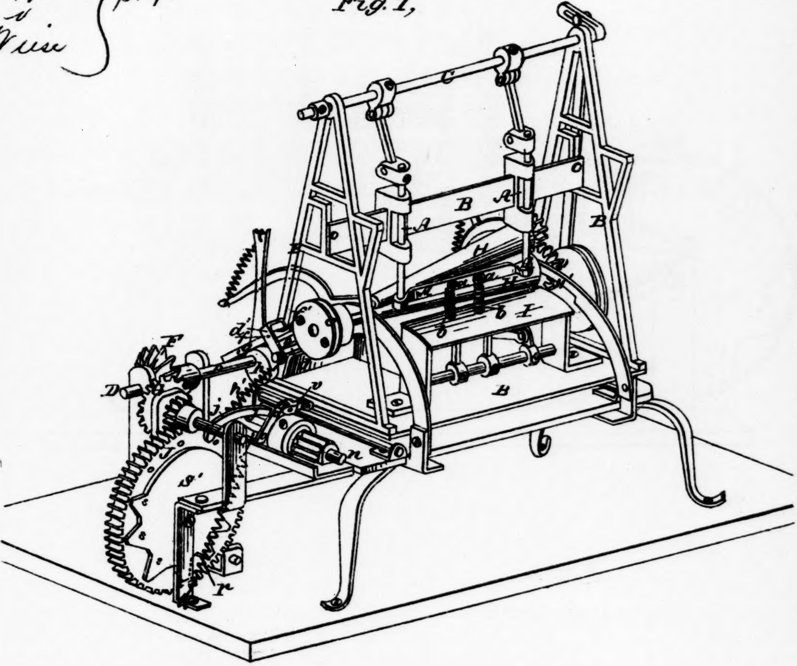
Fig. 1,



WITNESSES

Georgii
E. A. Dick

INVENTOR

August Beck,
by M. Bailey
his ATTORNEY.

2 Sheets—Sheet 2.

A. BECK,

Assignor, by mesne assignments, to L. DRYFOOS.

Quilting-Machine.

No. 9,097. **Reissued Feb. 24, 1880.**

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Fig. 2,

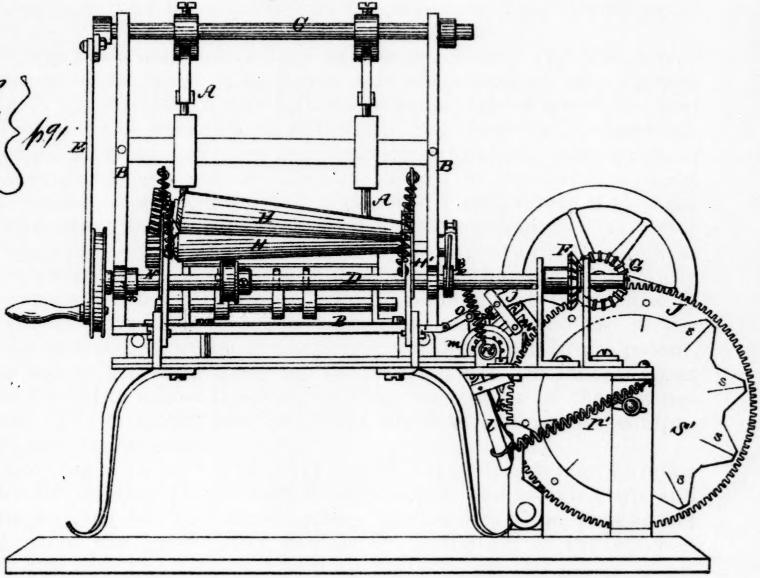


Fig. 3,

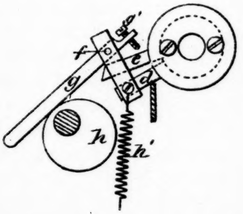
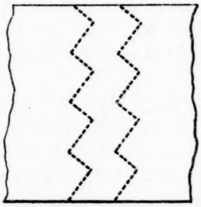


Fig. 4,



WITNESSES

A. Georgii.
Ed. A. Dick

INVENTOR

August Beck,
by M. Bailey
his ATTORNEY.

to be used for quilting fabrics. It may be used, however, for sewing ornamental patterns of various kinds.

My invention consists of certain improvements on the quilting-machine described and shown in letters patent No. 159,884, dated February 16, 1875, these improvements having reference to the feed and the mechanism for laterally reciprocating the sewing-frame. They will be explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the machine. Fig. 2 is a rear elevation of the same. Fig. 3 is a side elevation, on an enlarged scale, of the mechanism through the intermediary of which the feed is effected. Fig. 4 is a pattern of the stitching made by the machine.

I shall give but a general and brief description of such parts of the machine as are not immediately related to my improvements. The general organization does not materially differ from that of the machine described in my above-recited letters patent.

Before proceeding to a description of my improvements, which, as above stated, relate to the feed and to the mechanism for laterally reciprocating the sewing-frame, I would remark that in the use of my patented machine difficulty was experienced in the use of the presser-feet, which, under the arrangement described in the patent, were apt to rub and drag on the cloth, which was, therefore, at times caused to follow the reciprocating movement of the sewing-frame. The arrangement itself was, moreover, somewhat complicated and cumbersome.

I now use with each and every needle bar or holder *a* an annular vertically-yielding presser-foot, *b*, attached to and moving up and down with the bar and surrounding the needle. The presser-feet thus press the goods only during the formation of the stitches. They rise with the needles, and their pressure on the goods is entirely taken off when the needles are out of the cloth. They are made vertically yielding by being in part composed of spirally-coiled wire springs, as shown.

The needle-holding frame (marked A) moves up and down in guides in the laterally-reciprocating sewing-frame B, this up-and-down movement being imparted from a rock-shaft, C, which is operated by a crank and driving-shaft, D, through the medium of a connecting-rod, E, jointed to a slotted arm on shaft C, in which arm its joint-pin is adjustable to or from the axis of the shaft C, in order to regulate the length of the needle-stroke.

The driving-shaft D is rotated by gearing F G, the gear-wheel F having fixed bearings, and being connected with the shaft D by a spline-and-groove connection, which permits the shaft to laterally reciprocate with the sewing-frame independently of the driving-gear.

In my patented machine the regular forward feed of the goods was effected by feed-rollers intermittingly rotated by means of a pawl and ratchet. No adequate provision was there made for a change of feed, and when conical bodies of skirts or skirt-borders were to be quilted it was necessary to drag the material through on one side, at the same time crowding it back on the other, as is done on ordinary sewing-machines. This, while being easily and readily effected on such machines, and the material being turned under and around a single needle, without any inconvenience to the operator and without injury to the fabric or to the parts of the mechanism which hold the material, cannot be done in connection with a gang of needles with a feeding mechanism holding the material both intermittingly during the intervals of stitches and continuously between sets of rollers without great manual difficulty to the operator and without such strain upon the material and friction upon the feeding mechanism as will endanger the quality of the work and the operation of the machine. To remedy this I now use a different mechanism for actuating the feed-rolls, and so organize it that the length of feed may be varied at pleasure.

I also have devised for the purpose of feeding conical strips of goods—such as the conical bodies of skirts or skirt-borders—
93 a feed device operating intermittingly between the formation of the stitches, which extends substantially throughout the width of the conical strip of goods, and which, as it departs from the shorter curved edge and approaches the longer curved edge of the goods, is adapted to have a proportionately increased range of feed-movement so that it will feed the conical strip of goods in the requisite curved path evenly and without any injurious strain or drag.

The feed device in which I have embodied this feature of my invention consists, as shown in the drawings, of feed-rolls H, which are made of conical shape and of such taper or relative diameters at their respective ends as to conform to the shape of the skirt or border to be quilted.

The cloth to be sewed passes over the cloth-plate I, under and back of the lower roll, thence up between the two rolls and to the front of the upper roll, over which it finally passes. The rolls are made conical only for the purpose above mentioned. To feed straight goods they are made cylindrical. They do not move with the sewing-frame. They have no movement of lateral reciprocation, but revolve in bearings formed in a stationary frame, H′. They act intermittently, resting during the formation of the stitch, and feeding the goods when the needles are out of the cloth.

The intermittent movement of rotation is produced as follows: The lower roll is the one that is positively acted on. The other roll has movable boxes acted on by springs, which cause it to bear with yielding pressure on the lower roll, the two rolls being geared together, as shown.

The shaft or journal of the lower roll is at one end prolonged to extend beyond its bearing, and on this prolonged end is mounted a hub, the periphery of which is encircled by a spring ring-like clasp, *c*, which is not a continuous ring, but has separate ends, one of which, *d*, carries a yoke, *d′*. The other end, *e*, directly above the end *d*, is free, and normally is somewhat separated from the other. Pivoted at *f* in the yoke *d* is a lever, *g*, whose shorter arm overhangs the end *e*, and whose longer arm is in contact with a cam, tappet, or eccentric, *h*, on the driving-shaft, said part *h* being of a width sufficient to allow it to reciprocate with the sewing-frame without quitting the lever.

When the longer arm of the lever is raised by the cam its shorter arm bears on the end *e* of the spring-clasp, and first forces it down toward the other end, and so causes the clasp to clutch the hub. The continued movement of the lever now causes the hub to make a movement of partial rotation, thus operating the feed-roll. The extent of the movement of the roll is determined by the amount of lost motion of the lever, and this lost motion is regulated by means of a screw, *g′*, in the shorter arm of the lever, which may be caused to approach the end *e* of the clasp more or less, as required.

I thus, in effect, have a friction-clutch which is caused to engage and operate the feed by means of a vibratory lever, which is caused to act on the clutch sooner or later in its stroke, according to the length of stitch required. The lever is held down to the eccentric *h* by a spring, *h′*.

The same kind of mechanism is employed to give movement to the laterally-reciprocating sewing-frame. In this case, however, as seen in the drawings, the mechanism is duplicated, one friction-clutch, *i*, and lever *j* being required to move the frame in one direction, and one friction-clutch, *k*, and lever *l* being required to move the frame in the other direction. The mechanisms are mounted one on one side and the other on the other side of a central flange, *m*, on a shaft, *n*, which is rocked back and forth by the action of the clutches, and is connected with the sewing-frame by a rod, *o*, jointed at one end to an arm projecting from the sewing-frame, and at the other end to a radial arm projecting from the shaft *n* or from the flange *m* thereon.

The levers *j* and *l* are held by springs *p p′* against the pattern-cams, by which they respectively are acted on, and this brings me to the last portion of my improvements, which relates to a pattern mechanism, or mechanism for giving to the sewing-frame the lateral movement required for the particular pattern to be made.

In my patented machine I use for this purpose a peripherally cam-grooved pattern-wheel. This wheel is required to be changed not only for each regular feed—*i. e.*, for varying lengths of stitches, but also for every figure or pattern. To remedy inconveniences arising from this plan I have now adopted a permanent wheel, J, gearing with the driving mechanism, and carrying on its opposite faces the cam-points *s*, which operate the levers of the friction-clutches. These cam-points are removable from the wheel, and may be replaced by others, so that with the same wheel any number of pattern-cams can be interchangeably used. The cam-points *s* may be in one piece with the central disk S′, or they may be made separate from the disk and attached independently of one another to the wheel. The wheel is of a size to make one element of the design or pattern, so that at each revolution of the wheel one element of the design will be completed. For instance, the cams shown in the drawings will make the zigzag pattern shown in Fig. 4, and that pattern is composed of a number of elements, each of which consists of up-and-down lines in **V** form. While the series of cams on one side of the

wheel act on one lever the other lever is opposite the open space on the cam-disk on the other side of the wheel. Thus the one set of cams, acting on one lever by a series of intermittent impulses, draws the sewing-frame in one direction. Those cams then become inactive, and the opposite set commences to act on the other lever,
94 causing the frame to move in a similar manner in the other direction, thus, in conjunction with the regular forward feed, causing a pattern to be produced like that shown in Fig. 4.

I have described only so much of the machine as required to illustrate my improvements. The stitch-forming mechanisms, one for each needle, may be of any approved pattern, embracing tension, take-up, spool-holder, shuttle, or hook for the under thread, &c.

Having described my improvements, what I claim, and desire to secure by letters patent, is—

1. In a machine for quilting conical strips of goods, the combination, with the series or gang of sewing mechanisms and the cloth-plate which supports the goods under the action of the same, of a feed device operating intermittingly in the intervals between the formation of the stitches, which extends and operates substantially across or from edge to edge of the conical strip of goods, and which, as it departs from the shorter curved edge and approaches the longer curved edge of said goods, is adapted to have a proportionately increased range of feed-movement, substantially as and for the purposes set forth.

2. The combination, with a series of vertically-reciprocating needles mounted in a laterally-reciprocating sewing-frame, of conical feed-rolls and mechanism for causing them to act intermittingly during the intervals between the formation of stitches, substantially as herein shown and described.

3. The described mechanism for operating the feed, consisting of a friction-clutch clasping the feed-shaft, in combination with a vibratory pivoted lever supported on one end of the clutch, and having one of its arms overhanging but not attached to the other and free end of the clutch, substantially as set forth, so that the movement of said lever shall cause the clutch first to close upon the shaft and then to rotate the same, as set forth, whether the said mechanism be used to operate the forward or lateral feed.

4. The combination of the friction-clutch, the feed-shaft embraced by the same, and the vibratory lever provided at that end, which acts on the clutch, with means of adjustment, whereby the lost motion of the lever may be increased or decreased at pleasure to regulate the length of feed.

5. The combination, with the sewing-frame, of the pattern-wheel and removable pattern-cams, one set on each face of the wheel, the one set designed to move the sewing-frame in one direction and the other set in the other direction, each set acting alternately on the frame, and both being removable, to allow different sets of pattern-cams to be interchangeably used on the same wheel.

6. The pattern-wheel with removable pattern-cams, one set on each face of the wheel, in combination with the friction-clutches and their operating-levers, one set for each set of pattern-cams, and

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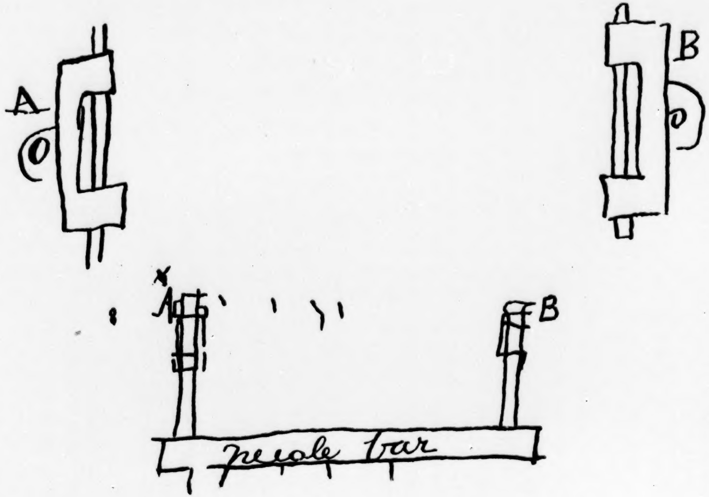

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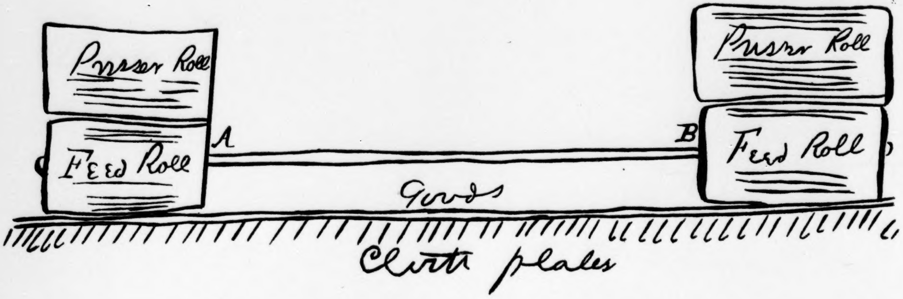

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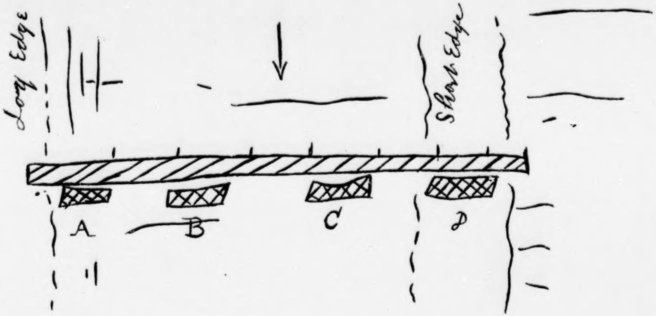

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a rock-shaft, on which said clutches are mounted, connected with and imparting a laterally-reciprocating movement to the sewing-frame, substantially as herein shown and set forth.

In testimony whereof I have hereunto set my hand this 13th day of January, 1880.

AUGUST BECK.

Witnesses:
GEORGE F. LANGBEIN,
E. J. SCHLEPEGRELL.

(Here follow diagrams marked pp. 95, 96, & 97.)

98 United States Circuit Court, Southern District of New York.

LOUIS DRYFOOS *against* WILLIAM WIESE.

It is hereby stipulated and agreed that the testimony on the part of the defendant be taken before Robert Jackson, a notary public, as special examiner, and the entry of an order to that effect is hereby waived by counsel for the respective parties.

Dated New York, April 21, 1882.

Met pursuant to notice.

Present: Gilbert M. Plympton, counsel for the defense; Edmund Wetmore, Esq., counsel for the complainant.

99 WILLIAM WIESE, a witness on behalf of the defense, being called, duly cautioned, and sworn under the sixty-seventh rule of equity, as amended, says, in answer to interrogatories propounded to him by Mr. PLYMPTON, as follows:

Int. 1. What is your name, age, residence, and occupation, and are you the same William Wiese who has heretofore been sworn and examined in this case?

A. I am the same person who has been heretofore sworn and examined in this case.

Int 2. Were you present when Henry B. Renwick examined the sewing-machines on the premises No. 584 Hudson street, in this city?

A. Yes; I was.

Int. 3. Who showed and explained to him the machines?

A. I did.

100 Int. 4. Were you present when Mr. John Boyd Eliot examined the sewing-machines at 584 Hudson street? And, if you know, state who showed and explained to him the machines.

A. I was present, and I explained the machines to him.

Int. 5. State whether the machines examined by Mr. Eliot were the same machines that were examined by Mr. Renwick.

A. They were the same.

Int. 6. State whether the machines when examined by Mr. Eliot were in precisely the same condition as when examined by Mr. Renwick.

A. They were in the same condition as when Mr. Renwick saw them.

Int. 7. Mr. Renwick, in his evidence, says, in substance, that you put the machines in operation for him—one of the four-motion feed-machines and one of the roller-feed machines. State how the feeding devices of the four-motion feed-machine were adjusted
101 at the time you passed through and sewed cloth on that machine.

A. They were adjusted perfectly straight to feed straight.

Int. 8. State whether you sewed on the four-motion feed-machine goods with conical sides, as well as goods with straight sides, on this occasion.

A. I did sew both on it.

102 Int. 9. How did you sew on the four-motion feed-machine, with feed adjusted for straight-edged goods—goods having conical sides? Explain fully.

A. Well, I sewed it by guiding it with my hands, holding it (the goods) back on one side.

Int. 10. State whether the sewing, under these conditions, was in straight or in curved lines.

A. The stitches were at an angle parallel with the angle of the goods.

Int. 11. Was the four-motion feed-machine at any time during Mr. Renwick's visit adjusted to feed in any course but a straight one?

A. No, sir.

Int. 12. Did you ever manufacture goods on the four-motion feed-machine with a feed adjusted otherwise than to feed in a straight course?

A. No, sir.

Int. 13. State why not.

A. The goods I manufacture come in different shapes, and the only way to get them through is to operate and guide them by hand.

Int. 14. Mr. Renwick states that you informed him that the four-motion feed could be adjusted to feed at greater speed on one side than the other; what, if this be true, is the purpose of such adjustment?

A. Well, that adjustment which I stated to Renwick is a stitch regulator—regulating the length of stitches.

Int. 15. State, if you know, whether or not it is common in sewing-machines to regulate the stitches by such an adjustment of the feed as you described to Mr. Renwick and such as your four-motion feed-machines were capable of.

A. The adjustment of our four-motion machines is made on the same principle as any four-motion sewing-machine that has been in use for many years.

Int. 16. State whether the roller-feed machine that you showed Mr. Renwick had its feed-rollers adjusted to sew straight-edged goods.

A. No, sir.

Int. 17. State whether this roller-feed machine that Renwick saw is the same in construction, so far as the feed-rolls are concerned, 103 as is shown in the sketches in Complainant's "Exhibit Sketch" and Complainant's "Exhibit Wiese's Sketch."

A. Yes, sir; the same.

Int. 18. Mr. Renwick states that the feeding devices employed in the sewing-machines which he saw in Hudson street are inferior to the feeding devices of the Beck machine; state what you know concerning this.

A. All that I can state is that my machine is superior to the Beck machine; it will do better work and work faster; I also can sew any curve, which they can't sew on the Beck machine, without changing the roller.

Int. 19. Do you mean by your last answer that in the Beck machine the conical feed-rollers must be changed for goods having different curves?

A. Yes, sir.

Int. 20. Explain, in detail, what you mean by the statement that your machine will do better work than the Beck machine.

A. It is more regular—better stitches and done nicer.

Int. 21. State whether Mr. Dryfoos, the complainant in this suit, before and after the commencement of this suit endeavored to get permission to use your machines.

A. He did, after the commencement of the suit, and continued to do so up to within a few days, and repeatedly asked me if he could use the machines, and told me if I would let him get up a company to build and operate these machines he would withdraw this suit, and while he was making these overtures to me he did not press this suit—for a year or more, until recently, when I refused his propositions.

Cross-examined by Mr. WETMORE:

Cross-int. 22. Mr. Koch got up your machines, did he not?

A. Mr. Koch was a shareholder of the Union Machine Perforating Company, and was employed in the machine-shop where these machines were built.

Cross-int. 23. Was not Mr. Koch the machinist who designed and built the machines?

A. Yes, sir—that is, he was in charge of this machine-shop.

104 Cross-int. 24. You say the quilting done on your machines is more regular and nicer than that done on Beck machines. Do you mean that you can quilt conical strips as well as straight strips more regular and nicer on your machines than can be done on the Beck machines?

A. I can; yes—that is, from the work done on that machine (the Beck), which work I have seen in my place.

Cross-int. 25. And could you do the conical strips more regular and nicer than could be done on the Beck machine, both by your roller quilting-machine and by your four-motion feed-machine?

A. Yes; I think I can.

Cross-int. 26. Can the four-motion feed-machine have its feed adjusted so that it will feed a conical strip of goods going through the machine faster at one edge than at the other?

A. That I have never done and never tried it.

Cross-int. 27. That is not an answer to my question. I call your attention to the fact that I don't ask you what you have done or tried to do with the machine, but whether the machine is so built that you can adjust its feed by using the adjustments you have got on the machine so that it will feed faster one edge of a conical strip than it does the other?

A. If I would adjust it that way it would not work at all.

Cross-int. 28. Can you or can you not adjust your four-motion feed-machine so that it will feed faster at one edge of a conical strip of goods than at the other?

A. I don't know.

Cross-int. 29. Look at the Exhibit "Wiese's Sketch" and state whether the feed marked "A" can be adjusted to feed faster than the feed marked "D?"

A. I don't know.

Cross-int. 30. Take the four-motion feed. You have had a great many yards of conical strips quilted on that machine, have you not?

A. I have quilted conical skirts on it; that is what this machine is made for.

Cross-int. 31. How wide goods are quilted on that machine?

105 A. The widest I can quilt on it is twelve inches; the width is generally nine inches.

Cross-int. 32. And those goods are curved goods, are they not?

A. They are, more or less.

Cross-int. 33. Do you know of your own knowledge whether the operatives who were quilting those goods did not adjust the feed so that one edge of the goods would be fed faster than the other?

A. I do not. Operatives in my business have strict orders not to adjust anything, and they never have, to my knowledge.

Cross-int. 34. What is it necessary to do in order to adjust the throw of the feed of your four-motion machine?

A. There is a regular screw-bolt with a nut on it, and by regulating it up and down you can regulate the stitch either short or long.

Cross-int. 35. Have the operatives in your factory strict orders never to adjust the feeds to regulate the stitches according to the work that they are doing?

A. They have.

Cross-int. 36. Who does that adjustment when necessary?

A. I do.

Cross-int. 37. Then, when a girl is working on a machine in your establishment, when she wants to make the stitch a little longer or a little shorter by turning an ordinary adjustment screw, it is necessary for her to send to you to turn the screw?

A. Certainly.

Cross-int. 38. In the roller quilting-machines are those machines capable of feeding one edge of a conical strip, such as is herewith shown you, faster than the other?

A. Yes.

Strip last shown witness marked for identification "Exhibit Specimen Conical Strip."

Cross-int. 39. Have you quilted on said roller quilting-machines conical strips substantially like the specimen just marked?

106 A. Yes.

Cross-int. 40. In quilting such strips do you adjust the feed so as to feed at one edge faster than at the other?

A. Yes.

Cross-int. 41. If the quilting done on the skirts on your four-motion machines is done on curved goods how is it possible that the goods should pass through the machine if one edge don't pass through faster than the other?

A. In the first place, the operator has to guide it; then the outside feeder—by that I mean the top feed that is on the small side of the skirt—has to carry the whole top part of skirt, along which holds the goods so much back on that side that, almost without guiding, it runs through in the regular shape.

Cross-int. 42. Is the quilted part of the skirt that goes through the four-motion feed-machine the same as the specimen exhibit above referred to, except not so wide?

A. It is the same, only smaller quilted; I mean that it is not quilted to the same width.

Cross-int. 43. And do you think that simply by means of the operator dragging with her hands and the weight of the skirt pulling back that curved goods can be quilted so as to make regular, practicable, merchantable work?

A. Yes, sir.

Cross-int. 44. Do you mean that by guiding the goods and holding back one side that this can be done on any ordinary quilting-machine intended for straight goods?

A. It can, if they have the same feed device as I have got—the four-motion drop-feed.

Cross-int. 45. Can it be done on your roller-feed?

A. No, sir.

Cross-int. 46. What is the reason that this can be done on the four-motion feed and can't be done with the roller-feed?

A. In a drop-feed it holds the goods and lets go of it; then the stuff is so that you can guide it any way; in a feed-roller it holds the goods always tight in one position.

Cross-int. 47. Then you mean that when the four-motion feed has dropped down and let go of the goods you can then guide it?

107 A. Yes, sir; I can guide it then, and also when it holds, before it drops down.

Cross-int. 48. But you can't do that with the roller-feeds because they hold the goods all the time?

A. I cannot.

Cross-int. 49. Can you do this while the needle is in the goods if the needle-bar is not a swinging one, but the needles play straight up and down?

A. I can't turn any goods while the needles are in it.

Cross-int. 49½. If curved goods are fed through a quilting-machine faster at one edge than at the other that will make the stitches at the edge where it is fed faster longer than the stitches at the other edge, will it not?

A. Yes, sir.

Cross-int. 50. Is there a separate adjustment for each of the feeds on your four-motion feed-machine?

A. No, sir; they are all in one shaft.

Cross-int. 51. Do you mean to say that if you adjust the throw of one by means of the screw you have mentioned that that adjusts the throw of all the feeds?

A. It does; yes.

Cross-int. 52. Then why did you say that you did not know whether or not one feed could be adjusted so as to have a greater throw than any one of the other feeds?

A. I did not say so; I said in the other answer that I did not know; that related to the feed; this relates to setting the stitches, making them long or short.

Cross-int. 53. What is the difference between adjusting a feed so as to increase its speed of feeding in a four-motion feed and adjusting it to make a longer stitch?

A. There is no difference at all.

Redirect by Mr. PLYMPTON:

Redirect Int. 54. Do you wish to be understood in your answer to the last cross-question as saying that by adjusting the feed in the four-motion feed-machine for regulating the stitches of the machine that such adjustment will enable the feed to feed one side of the goods through the machine faster than the other side?

A. No, sir.

108 Redirect Int. 55. What do you mean by your answer to the 53d cross-question then?

A. Well, I mean by adjusting the feed to faster speed is the same as giving the machine a longer stitch. If I set the feed to make a longer stitch it has to travel further than before. That is what I call faster speed.

Redirect int. 56. Now, in setting this feed to regulate the stitch, as you have described, are all the feed-dogs set at the same time or do you have to adjust each dog separately?

A. They are all set at the same time by one and the same operation and by the same screw, because they are all on one shaft.

Recross by Mr. WETMORE:

Recross-int. 57. How are the feed-dogs, as you term them, fastened to the shaft?

A. They are fastened to the shaft by a spring.

WILLIAM WIESE.

Subscribed and sworn to before me this 24th day of April, 1882.

ROBERT JACKSON,
Special Examiner.

April 25th, 1882.

Met pursuant to adjournment.

Counsel present as before.

The witness Wiese desires to correct his answer to the last recross-question, in which he said that the feed-dogs are fastened to the shaft by a spring, as follows:

This statement of mine was an error. What I should have said and intended to say was that the shaft passes through the feed-dogs, to which they are fastened by a set-screw in each dog.

R. J.

109 John Boyd Eliot, a witness on the part of the defendant, being duly called, sworn, and cautioned and examined by Mr. Plymptom, says as follows:

Int. 58. What is your name, age, residence, and occupation?

A. My name is John Boyd Eliot; age, 54 years; residence, New York city, and my occupation is a mechanical engineer and solicitor of patents, and for the last 25 or 30 years have been much occupied in testifying as an expert in patent causes.

Int. 59. What experience, if any, have you had in matters relating to mechanical construction, particularly as applied to sewing-machines and their mechanism?

A. I am generally familiar with the principles of mechanics as applied to the various branches of the arts, and am practically familiar with the construction and mode of operation of nearly or quite all the sewing-machines that have been produced and are at present in operation; have often solicited patents for various kinds of sewing-machines, and have often testified as an expert in litigations involving such machines.

Int. 60. —.

Defendant's counsel offers in evidence certified copy of the original patent of August Beck, dated May 1st, 1877, No. 190,184, and it is marked "Defendant's Exhibit B;" also a certified copy of the first reissue of the above patent, dated 29th of January, 1878, No. 8063, which is marked "Defendant's Exhibit C;" also a certified copy of the reissue of the above reissue, dated the 24th of February, 1880, No. 9097, which is marked "Defendant's Exhibit D;" also a certified copy of letters patent granted to August Beck on the 16th of February, 1875, No. 159,884, which is marked "Def't's Exhibit A."

Int. 61. Have you examined and do you understand the four exhibits above named, viz., A, B, C, and D?

A. I have carefully examined said exhibits and believe I understand them.

110 Int. 62. Have you examined the defendant's sewing-machine at 584 Hudson street, classed as the four-motion feed-machines and the roller feed-machines?

A. I have examined said machines and understand their construction and mode of operation.

Int. 63. Have you read the testimony of complainant's expert, Henry B. Renwick, concerning said machines?

A. I have.

Int. 64. Mr. Renwick states, in answer to the 6th direct question, that the rollers on the shaft of the defendant's roller feed machines were moved by pawls and ratchet-wheels through the intervention of changed gears, and the shaft on which the rollers were supported was cut in two, a long, rough roller serving as a sleeve to keep the two parts of the shaft in line. This feeding shaft was, therefore, in fact, two shafts having the same axis. He also said in the same answer that the revolution of these rollers was practically, though not absolutely, continuous. Now, what can you say in reference to these statements of Mr. Renwick?

A. I can say that I have examined the said roller feed machine very carefully and have experimented with it, and I find that the feeding devices are not only practically continuous in their movement, but "absolutely" so—*i. e.*, they do not stop in their feeding operation when the machine is in motion—and in order that such a continuous motion may be performed by the feeding devices the needles are so arranged as to be carried along with the fabric and by it during the time that the needles are in the fabric.

This continuous motion is produced by means of two eccentrics on a driving-shaft operating two pawls, which engage with ratchet-wheels on the feed roller shaft, and their arrangement is such that before one pawl ceases its operation in turning the feed roller shaft the other pawl begins to feed, and the result is that the feed-roll is not allowed to stop while the machine is in motion.

To compensate for this continuous movement, the needle-carrier is pivoted so as to permit the needles to be slightly vibrated or carried forward with the fabric during the time that they are forming the stitches within it—*i. e.*, descending into it, resting while the shuttles pass through the loops of the needle thread, and again rise
up out of the fabric; and, in addition to this vibratory motion
111 of the needles, the holes in the cloth-plate into which the
needles descend, instead of being round, as usually made in sewing-machines, are made oblong to permit the swinging or vibration of the needles.

I can further say that, instead of there being any conical or conical-shape feed-rolls in the said machines and extending from one edge of the fabric to the other, they are simply two short cylinders of equal diameter located near the outer edges of the fabric and with bearing rolls of similar size and shape resting upon them, between which the fabrics to be quilted or sewed together are passed.

Both pairs of these rolls take their motion from the same driving-shaft through the double pawls and ratchet-wheels which I have already spoken of, but when it is desired to change the speed of one edge of the fabric to move faster than the other an intermediate gear-wheel is introduced in the same manner as is used in a screw-cutting lathe to change the feed as may be desired. Consequently I do not agree with Mr. Renwick in his testimony in this case as to the use of conical rolls or rolls that extend substantially across the surface of the fabric, or to feeding devices of any kind that are intermittent in their action when considering the roller feeding machine of the defendant.

R. J.

Adjourned to April 25th at 11 a. m.

APRIL 25TH, 1882.

Met pursuant to adjournment.

The examination of the witness ELIOT continued:

Int. 65. Mr. Renwick, the complainant's expert, further says, in answer to the 6th direct question, in referring to the 2d class of four-motion feed-machines of the defendant, that the feed-bars could be moved backward and forward so as to regulate the length of the stitches, and could be altered by moving the parts spoken of (*i. e.*, the set-screws in the slots of the levers that work against the cams) up and down in the slots of the lever, and when adjusted so
that the feeding surfaces move each a greater distance than
112 the other, commencing at one edge of the cloth and ending
at the other edge thereof, they have precisely the same mode of operation as the conical feed-rollers in the reissue 9097. What can you say regarding this statement of Mr. Renwick?

A. I can say, concerning such a statement, that the construction and organization of the several parts of said machines are such as to preclude the possibility of such a movement, even though such an adjustment were made (which adjustment, I understand both from the operators that used said machine and also from Mr. Weise, is never made).

But assuming that the set-screws in the slotted levers were moved farther down in the slots, as suggested by Mr. Renwick, to give the feed-bars at one side of the machine a greater throw than the bars at the other side, even then the movement that he anticipates would not be accomplished, for the reason that the feed-levers are attached firmly to the rod which moves them back and forth by having the rod pass directly through the holes in their outer ends, and a set-screw is provided in the outer end of each lever or feed-bar to hold it firmly upon the rod which carries them.

The other ends of said levers have their roughened surfaces extending up through holes in the cloth-plate, and these holes are made of the exact width of the feeding surfaces, or so nearly so that the ends of the feed-levers fit closely in the sides of said holes, and the cloth-plate thereby serves as a guide to said feed-levers.

Now, inasmuch as these feed-levers extend at right angles from the rod that carries them about four and one-half inches on one side of said rod, it is evident that if the rod be vibrated at one end to a greater distance than at the other, as suggested by Mr. Renwick, the sides of the feed-levers will be forced laterally against the sides of the holes in the cloth-plate, and the result is that the two surfaces will thereby be cramped together so as to prevent the feed-bar

A. I have examined said machines and understand their construction and mode of operation.

Int. 63. Have you read the testimony of complainant's expert, Henry B. Renwick, concerning said machines?

A. I have.

Int. 64. Mr. Renwick states, in answer to the 6th direct question, that the rollers on the shaft of the defendant's roller feed machines were moved by pawls and ratchet-wheels through the intervention of changed gears, and the shaft on which the rollers were supported was cut in two, a long, rough roller serving as a sleeve to keep the two parts of the shaft in line. This feeding shaft was, therefore, in fact, two shafts having the same axis. He also said in the same answer that the revolution of these rollers was practically, though not absolutely, continuous. Now, what can you say in reference to these statements of Mr. Renwick?

A. I can say that I have examined the said roller feed machine very carefully and have experimented with it, and I find that the feeding devices are not only practically continuous in their movement, but "absolutely" so—*i. e.*, they do not stop in their feeding operation when the machine is in motion—and in order that such a continuous motion may be performed by the feeding devices the needles are so arranged as to be carried along with the fabric and by it during the time that the needles are in the fabric.

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To compensate for this continuous movement, the needle-carrier is pivoted so as to permit the needles to be slightly vibrated or carried forward with the fabric during the time that they are forming the stitches within it—*i. e.*, descending into it, resting while the shuttles pass through the loops of the needle thread, and again rise
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needles descend, instead of being round, as usually made in sewing-machines, are made oblong to permit the swinging or vibration of the needles.

I can further say that, instead of there being any conical or conical-shape feed-rolls in the said machines and extending from one edge of the fabric to the other, they are simply two short cylinders of equal diameter located near the outer edges of the fabric and with bearing rolls of similar size and shape resting upon them, between which the fabrics to be quilted or sewed together are passed.

Both pairs of these rolls take their motion from the same driving-shaft through the double pawls and ratchet-wheels which I have already spoken of, but when it is desired to change the speed of one edge of the fabric to move faster than the other an intermediate gear-wheel is introduced in the same manner as is used in a screw-cutting lathe to change the feed as may be desired. Consequently I do not agree with Mr. Renwick in his testimony in this case as to the use of conical rolls or rolls that extend substantially across the surface of the fabric, or to feeding devices of any kind that are intermittent in their action when considering the roller feeding machine of the defendant.

R. J.

Adjourned to April 25th at 11 a. m.

April 25th, 1882.

Met pursuant to adjournment.

The examination of the witness Eliot continued:

Int. 65. Mr. Renwick, the complainant's expert, further says, in
answer to the 6th direct question, in referring to the 2d class of
four-motion feed-machines of the defendant, that the feed-bars could
be moved backward and forward so as to regulate the length of the
stitches, and could be altered by moving the parts spoken of (*i. e.*,
the set-screws in the slots of the levers that work against the cams)
up and down in the slots of the lever, and when adjusted so
that the feeding surfaces move each a greater distance than
112 the other, commencing at one edge of the cloth and ending
at the other edge thereof, they have precisely the same mode
of operation as the conical feed-rollers in the reissue 9097. What
can you say regarding this statement of Mr. Renwick?

A. I can say, concerning such a statement, that the construction and organization of the several parts of said machines are such as to preclude the possibility of such a movement, even though such an adjustment were made (which adjustment, I understand both from the operators that used said machine and also from Mr. Weise, is never made).

But assuming that the set-screws in the slotted levers were moved farther down in the slots, as suggested by Mr. Renwick, to give the feed-bars at one side of the machine a greater throw than the bars at the other side, even then the movement that he anticipates would not be accomplished, for the reason that the feed-levers are attached firmly to the rod which moves them back and forth by having the rod pass directly through the holes in their outer ends, and a set-screw is provided in the outer end of each lever or feed-bar to hold it firmly upon the rod which carries them.

The other ends of said levers have their roughened surfaces extending up through holes in the cloth-plate, and these holes are made of the exact width of the feeding surfaces, or so nearly so that the ends of the feed-levers fit closely in the sides of said holes, and the cloth-plate thereby serves as a guide to said feed-levers.

Now, inasmuch as these feed-levers extend at right angles from the rod that carries them about four and one-half inches on one side of said rod, it is evident that if the rod be vibrated at one end to a greater distance than at the other, as suggested by Mr. Renwick, the sides of the feed-levers will be forced laterally against the sides of the holes in the cloth-plate, and the result is that the two surfaces will thereby be cramped together so as to prevent the feed-bar from working back to give the proposed motion, or if it slides back at all it will only have the motion of the shortest throw of the cam-wheel.

113 I found, by experimenting with the machines with reference to such a movement, that sometimes the feed-bar would stick so as not to feed at all to give the proper length of stitches, but that generally it would move back in a straight line, being guided by the ends of the feed-bars working in the rectangular hole in the cloth-plate.

To illustrate my meaning I have made a diagram to show the position of the feed-bars in connection with the rod that carries them and their position in the cloth-plate.

These are made about full size, as represented in the defendant's machines.

The cloth-plate is represented at A, the feeding surfaces at B, extending up through the holes in the cloth-plate; the rod that carries the feed-bars is shown at C, and it extends through holes in the ends of the bars, and they are fastened by set-screws extending through the bars to fasten them upon the rod.

Now, if one end of the rod C is moved further than the other end, say the distance indicated by the line E, then the end of the feed-bars at G would have to be tilted or forced over to correspond with the line D, or to give the amount of feed between C and F would require as much space as between the side of the feed-bar and the line D, as is indicated at G, but there is not so much space between the sides of the feed-bar and the holes in the cloth-plate, and therefore, as the machine is constructed, the supposed advancement of the bar at one end cannot be produced, or at least to any practical effect, as suggested by Mr. Renwick.

I further observed that there were marks in these machines, on the outer side of the frame, where these feeding adjustments are made, to indicate the points for moving the set-screws for varying the length of stitches, and I find that those were intended to set the screws so that the same length of feed would be produced at each end of the cloth-plate, or so that the feed-bars would work easily in the holes in the cloth-plate and without cramping on either side.

The sketch referred to by the witness in the above statement is offered in evidence by defendant's counsel, and is marked Exhibit "Eliot's Sketch."

114 Int. 66. What is the construction and operation of the presser-feet in the two classes of the defendant's machines—*i. e.* the roller-feed and four-motion feed, as you discovered when investigating them?

A. They were merely flat pieces or strips of metal that were supported at each end by rods, by which they were lifted and caused to descend, to rest upon the fabric in close proximity to the needles, in substantially the same manner as the presser-feet operate in any of the well-known sewing-machines, and have operated for the last twenty or twenty-five years.

Int. 67. Now, state whether or not you find in the defendant's machines, or any of them, the combination with each and every needle-bar or holder and annular vertically yielding presser-foot attached to and moving up and down with the bar and surrounding the needle, the presser-foot being composed of spirally coiled wire springs, as specified in the complainant's original letters patent, defendant's Exhibit B, and referred to in the first and second claims thereof.

A. No; I do not find any such device in the defendant's machine, but, on the contrary, as I have already stated, the devices that correspond to the presser-feet in the defendant's machines are plain flat surfaces, consisting of a single bar that extended the entire width of the machine or the fabric to be sewed, and works in front of the row of needles and in close proximity to them, and there is no spiral spring, or any device corresponding to it, surrounding any of the needles or connected with them.

Int. 68. What is the mechanism, as you understand it, for actuating the feeding devices so that the length of the feed may be varied at pleasure, or, in other words, for changing the feed in the defendant's two classes of machines? Please state fully and particularly.

A. In the defendant's machine, which has the rolls for carrying the goods, the method of changing the feed, as I have already explained in a previous answer, consists in introducing what are termed "change wheels"—*i. e.* wheels having different numbers of teeth, so that the motion of the rolls will be increased or diminished according to the variations in the number of teeth.

115 In the four-motion feed machines the variation of the feed for the different length of stitches is accomplished by moving a set screw up and down in a slotted lever at each end of the rod that carries the feed-bars, thereby changing the fulcrum of the levers that vibrate the feed-bars, and which are operated by eccentrics or cams on a shaft at the lower end of the levers.

Int. 69. How does this mechanism for changing the feed correspond with or differ from the devices described and claimed for performing the same work in the complainant's original patent No. 190,184—Defendant's Exhibit B?

A. They are substantially different. The devices for regulating the movements of the feed mechanism in Beck's original patent are very similar to the old friction-clutch mechanism for operating the feed in an early Singer sewing-machine, which consisted of a pair of clamping devices embracing a flange on the face of a wheel mounted on a feed-wheel shaft, said pair of clamping devices being operated in one direction by a spring and in the other by a cam or eccentric on a revolving shaft.

In the original patent to Beck a new element is introduced into this old feeding mechanism in the form of a "pivoted lever," with a set screw in its shortest end for the purpose of varying the length of the vibratory throw of said lever to vary the length of the stitches.

This lever is introduced between the old form of devices and the

eccentric or cam-wheel that operates the feed mechanism, and depends upon the "lost motion" between the lever that forms one of the jaws or clamping devices on the feed-roll shaft and set screw in the end of said lever for varying the length of stitches, and this "vibratory pivoted lever" constitutes the new element for operating the feed mechanism in the Beck patent in contradistinction to the old feeding devices used in the Singer sewing-machine, and which was also used in saw-mills for moving the carriage thirty or forty years ago, and this lever forms one of the distinctive elements in the third and fourth claims of the original Beck patent, and it depends, as I have already said, for its variable movements upon the "lost motion" between the end of the set screw in the end of
the lever and one of the arms of the friction-clutch, a feature
116 that would make it practically worthless in any sewing-machine running at a high rate or even at a moderate rate of speed.

Now, there is no such device, or anything corresponding to it, used in the defendant's machines for varying the length of stitches, or in connection with the feed motion or feeding mechanism of said machines.

Int. 70. Now, from your knowledge of the construction and operation of all the defendant's machines, state wherein such machines, or any of them, employ the elements of the combinations recited in the first and second claims of the complainant's reissue No. 9097.

A. I do not find in any of the defendant's machines the combination of devices as specified and claimed in either the first or the second claims of said patent, and for the reason already stated substantially in my previous answers.

But to refer more specifically to the machines, when compared with the claims of the said patent, the feeding device specified in the said reissue is a "device operating intermittingly in the intervals between the formation of the stitches," and "which extends and operates substantially across from edge to edge of the conical strip of goods." Now, as already explained by me, the feeding devices in the roller machines of the defendant operate continuously while the machine is in motion, and not "intermittingly;" and therefore if there is any difference between a thing that is moving and a thing that is stopped there is that difference certainly between the feeding devices in the defendant's roller machine and the first claim of complainant's reissue patent.

As to the phrase in the claim which requires the feeding device to extend from "edge to edge of the conical strip of goods," I can say, if it means anything at all, it means that the feeding surfaces are not to be limited to a pair of small nipping-wheels or feed-rolls, catching upon the two opposite edges of the fabric to be quilted. In other words, such a phrase does not mean that the feeding surface may be only one-sixth or one-eighth or one-tenth of the distance across the surface of the fabric or goods, but must be such a surface as is represented in the conical feed-rolls, as shown and described in complainant's reissue patent 9097, and which are specifically men-

tioned as one of the elements in the second claim of the said
117 reissue, and which extends and forms a bearing surface entirely across the surface of the goods to be sewed.

Now, as to the other class of machines of the defendant which have the four-motion feed, I have already explained, both in description and by a diagram, that the fabric or goods is not advanced faster on one edge than the other by the feeding mechanism contained in said machines, but that the advancement or change of direction of the material is accomplished by the operator in precisely the same manner as is done on the ordinary sewing-machine that has the four-motion feed, or, for that matter, any of the practical feeding devices, and which consist in properly directing the fabric to be sewed towards the feeding devices and before it is actually clamped between them, and therefore permits any kind of curvature of seams or stitching to be made, an operation that cannot be performed when the fabric is clamped or pinched between two surfaces that extend entirely across it.

And here I may remark that the organization of the defendant's machines having the four-motion feed makes them greatly superior to the machines having conical feed-rolls, shown and described in complainant's patent, for the reason that the four-motion feed, as in the ordinary sewing-machines, permits any change of direction of the fabric desired, so that any sorts of figures or forms of curvatures or angles can be made; whereas, by the use of the conical feed-rolls the fabric must be cut to suit the exact shape of the cones, or the cones must be formed to suit the shape of the fabric, and whenever a new shape, as, *e. g.*, of a shirt, is required, a corresponding pair of feed-rolls must be introduced with the machine.

Further examination is adjourned to Thursday, 27th April, 1882, at 10 a. m.

R. J.

APRIL 27, 1882.

Met pursuant to adjournment and adjourned to May 1, 1882, at 11 a. m., at same place.

R. J.

118 MAY 1, 1882.

Met pursuant to adjournment and adjourned to May 5, at same time and place.

R. J.

MAY 5, 1882.

Met pursuant to adjournment and adjourned, at request of plaintiff's counsel, to May 8, 1882, at same time and place.

R. J.

May 8, 1882.

Met pursuant to adjournment.

Cross-examination of witness Eliot by counsel for complainant:

Cross-int. 71. In the roller feed-machine of the defendant did you observe whether the fabric moved while the shuttles were passing through the loops of the needle-thread?

A. It did; it was constantly in motion, being carried both by the feed-rolls and the needle.

Cross-int. 72. Did you see any conical strips quilted on the defendant's four-motion feed-machine?

A. I did see several pieces, amounting at different times to some yards.

Cross-int. 73. What was the width of the strips?

A. The first that I saw I think were at least a yard wide, although the quilted portion was only about 9 or 10 inches; the material was intended for ladies' skirts, and the quilted portion was on the edge of the fabric intended for the bottom of the skirt; then I tried experiments at different times with narrower strips, say six, eight, or ten inches, probably.

Cross-int. 74. What were the dimensions of the holes in the cloth-plate through which the feed-bars worked in the machine last mentioned?

A. I did not measure them with a rule, but I should judge that they were about ½ an inch wide and perhaps ¾ of an inch in length.

119 Cross-int. 75. Did you measure the roughened surface of the feed-bar?

A. I did not; but I noticed that it fit nicely in the sides of the holes, as I have already explained, and it was substantially a square surface, the holes being made sufficiently long to allow the movement of the roughened surface to move in the direction of their length equal to the required length of stitches; in other words, they fit so nicely in holes as to serve as guides in their backward and forward movement.

Cross-int. 76. Was there on the machine a separate adjustment for each end of the shaft carrying the feed-bar, represented in your sketch by "C?"

A. There were.

Cross-int. 77. When it was desired to alter the length of stitch were there any means provided in the machine for securing precisely the same adjustment at both ends of the bar C, or did the uniformity of the adjustment depend solely upon the eye of the adjuster?

A. As I have already explained, there were little marks formed upon the outer sides of the frame of the machine in such relative position to the end of the set screw as to assist the operator in adjusting the feed so as to be equal at each end, and furthermore (I can say that if such adjustment were not made the effect would be to operate the said feed-bar by one cam instead of both, or to lock the sides of the feeding surfaces so as to prevent them from moving at all) there was no other special provision for said adjustment except the eye of the operator.

(The portion in parenthesis objected to as irresponsive.)

Cross-int. 78. Did you measure the distance between the guide-marks mentioned in your last answer?

A. No; I did not.

Cross-int. 79. Did you notice how many there were on each side?

A. I did not; I noticed two or three, but I am not certain whether there were more.

120 Cross-int. 80. About what was the distance between the guide-marks, according to your recollection, if you have any on that point?

A. About a $\frac{1}{4}$ of an inch.

Cross-int. 81. Would not the crowding of the feed-bar against the side of the slot, as illustrated in Defendant's Exhibit "Eliot's Sketch," to an extent sufficient to stop the feed, depend first on the amount of difference between the throw of the different ends of the bar "C," and, secondly, on the rigidity of the attachment of the feed-bars to the said bar "C?"

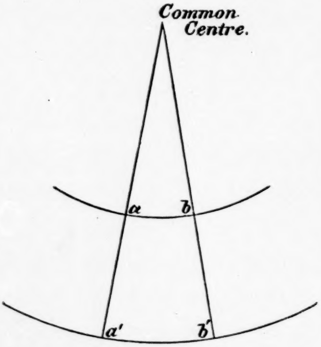
A. Yes. (But I may here remark that the bar "C" is a rod of iron over $\frac{1}{2}$ an inch in diameter, and it fits nicely in holes formed in the ends of the feed-levers, and when they are adjusted in proper position they are fastened by set screws extending through the ends of the feed arms, so that there is no chance for play or vibration in that portion of their structure.)

(Words in parenthesis objected to as irresponsible.)

Cross-int. 82. Taking a conical strip of the curvature that you saw fed through the machine we are now speaking of, and suppose that strip was fed through a machine by a feed having the requisite greater length of throw or operation at one end to enable it to be fed through smoothly and continuously, how much greater would the length of feed required be at the edge when the feed was longest than at the edge when the feed was shortest?

A. That would depend upon the degree of curvature given to the strip on the angles that were required to make the conical-shaped pieces referred to. I did not measure either of said angles or curves, neither do I believe any particular angles or curves can be fed regularly and continuously and smoothly through such machines without the constant assistance of the operator, the same as is done in the ordinary sewing-machine, and especially when such material is used having variable thicknesses, and with batting as is used in such quilted fabrics. Of course, if some particular angle or curvature be assumed, it is very easy to determine what the differences would be between the radii at different points from the centre. 121

Cross-int. 83. For the purpose of obtaining the result mentioned in the complainant's patent, 9097, as secured by the feed feeding faster at one end than the other, it is a sufficient increase of feed at the end requiring the fastest feed, is it not, if that end feeds faster by the length which the outer circumference of the strip exceeds that of the inner circumference of the strip for the distance between two radii from a common centre,



as illustrated in the rough sketch first made on the record in which the difference inquired of is indicated by the difference between the lines *a b* and *a' b'*?

A. Assuming that an increment of feed on one side of the goods faster than on the other is the result secured in the said patent of the complainants, then such increment would be equal to the difference between two radii taken at the points of intersection between the outer and inner circumference of the strip, or, as on the sketch, the difference between *a b* and *a' b'*.

Cross-int. 84. What was the increment effected by the change-gears in the defendant's roller-machine?

A. I did not measure the difference, but it was equal to the difference between the outer and inner circumference of the
122 circle of the fabric, whatever that might be, *i. e.*, assuming that the direction of the fabric would not be affected in any manner by the operator.

Cross-int. 85. Have you any recollection sufficient to give an estimate of the increment of feed affected by said change gears in the instances in which you saw them used?

A. I have not any certain recollection. My impression is that it would probably be equal to three-fourths of an inch in twelve inches. That is a mere guess.

J. BOYD ELIOT.

Subscribed and sworn to before me this 9th day of May, 1882.

ROBERT JACKSON,
Special Examiner.

Adjourned to May 9, 1882, at same time and place.

R. J.

MAY 9, 1882.

Met pursuant to adjournment.

Defendant's counsel offers in evidence certified copy file-wrapper and contents of Beck's first reissue, No. 8063, dated January 29, 1878, which is marked "Defendant's Exhibit E."

Adjourned to 12 m. of this day, at the office of the complainant's counsel.

R. J.

Met pursuant to adjournment.

Surrebutting testimony on the part of defendant taken by consent on this 29th day of May, 1882.

Counsel present as before.

The witness, WILLIAM WEISE, being recalled, and, in answer to interrogatories propounded by GILBERT M. PLYMPTON, defendant's counsel, says:

123 Int. 86. Look at the complainant's wooden model of a four-motion feed-machine, and state in what respect it resembles or differs from the four-motion feed-machine of the Union Machine Perforating Company.

A. It differs in every respect from the company's machine. In the first place the arrangement of the feed-dogs, or what Mr. Renwick has called the tails of the feed-dogs, are attached to their operating-rod in a manner wholly different from that of the company's machine. In this wooden model the tails of the feed-dogs are loosely placed on their supporting or operating rod with loose sleeves between each tail, so that each of the feed-dogs or their tails will easily and freely have a certain amount of side play, and, besides, the arms of the feed-dogs are, in proportion to the size of the machine, more than twice as long as the arms in the company's machines, and these arms are very much thinner and easily bent or are not as rigid as our feed arms, all of which is different from our construction.

Int. 87. What effect is produced by constructing and arranging the feed-dogs in the manner shown in the complainant's wooden model referred to?

A. The effect is that in this wooden model you can shove up one end of the rod supporting the tails of the feed-dogs without causing the dogs to bind in the slots in the cloth-plate, because the tails, being loose and allowed to play on their rod, will accommodate themselves to the changed position, which would not be the case if the arms of the feed-dogs were thick and rigid and rigidly fixed to the rod which passes through their tails, as in the defendant's machines. This wooden model seems to have been made for the purpose of illustrating a process of construction that will permit the feed to be adjusted to feed faster on one side or edge of a skirt than on the other; in that respect it also differs from the defendant's machines, which are not made for that purpose and cannot be used for any such purpose, for in defendant's machine any attempt at such an adjustment would at once result in jamming the feed-dogs in the slots in the cloth-plate, I am very certain.

Int. 88. What other differences exist between the wooden model referred to and the defendant's machine?

A. Another difference I see is that the presser-rollers on top of the cloth-plate in the wooden model are much wider than in the defendant's machine.

124 In the defendant's machine these feed-rollers are just long enough to cover the slots in the cloth-plate, the effect of which is that the goods to be sewed on defendant's machine can be guided much easier by hand to any angle than they could be with such rollers as are on the wooden model.

Another difference is that the driving-shaft is much nearer the slots in the cloth-plate in our machine, and the mechanism for conveying motion from the driving-shaft to the feed-dogs in defendant's machine is entirely different from the mechanism in the wooden model.

Int. 89. Have you anything that will show how the tails of the feed-dogs are fixed to the rod in the defendant's machine? And, if so, produce it.

A. Yes; I have here one of the actual rods and the feed-dogs taken out of one of the defendant's machines, and it is precisely like all the others that we use of this kind, and it was taken out of one of our machines and brought down here for the purpose of this examination.

(The shaft and feed-dogs produced by the witness are offered in evidence by the defendant and marked " Defendant's Exhibit Feed-Dogs.)"

Int. 90. Now, look at the complainant's wooden model of a roller feed-machine, and state whether that is like or different from the defendant's machine?

A. It is very different; in the first place the feed-rolls in this wooden model have an intermittent motion, whereas in the defendant's machine the rollers revolve continuously; in this wooden model the feed-rolls are revolved by two opposite cranks, which, together with the pawls and ratchets, necessarily give an intermittent motion of the feed-rollers; whereas, in the defendant's machine the feed-rollers are operated by eccentric cams fixed on one shaft (the driving-shaft), in such a way as to enable one eccentric cam to continue imparting motion before the other eccentric cam has ceased doing so, and these eccentric cams on the defendant's machine are so arranged in relation to each other that the motion is taken up and continued by one eccentric cam before the other eccentric cam has completed three-fourths of its revolution, leaving one-fourth of a revolution of each eccentric as a lap.

125 Int. 91. Have you anything to show how the cams of the defendant's machine are made?

A. Yes; I have here two of the original patterns from which the eccentric cams of the defendant's roller machine were made or finished up by; they are the original templates, and the eccentric cam on the defendant's machine is made accurately to correspond with the shape or outline of these patterns or templates.

The patterns or templates produced by the witness are offered in evidence by the defendant and are marked "Defendant's Exhibit Templates."

Int. 92. Does the wooden model roller-machine differ in any other respect from the defendant's machine?

A. Yes; in the "Exhibit Wooden Model Roller-Machine" the feed-rolls are six in number, and placed below the bed-plate, in which position the machine could not work in practice, for the reason that it leaves no room for the shuttle-race and shuttles.

The wooden model is, therefore, wholly an impracticable machine, and, besides, each of these six rolls of the wooden model seem to be substantially the same diameter, so that all of the rolls in this wooden model would feed to some extent, making practically a continuous feed-roll across the machine from one side to the other, or across the bed-plate, which is not the case with the defendant's machine, it having but two feed-rolls on each side of the machine, with two or three intermediate rolls having smooth surfaces, and much smaller in diameter than the feed-rolls, so that they, these intermediate rolls, shall not feed the goods, but only operate to keep the goods from wrinkling.

Another difference between the wooden model and the defendant's machine is that there are but two pressure rollers, one over each feed-roll at the side of the machine, so that the intermediate rolls cannot feed, whereas in this wooden model there is a long pressure roller between the feed-rollers, which will cause the intermediate rollers to feed the goods to some extent, making practically in the wooden model feed-rolls which extend entirely across the
126 width of the machine, which the defendant's does not, as before stated.

There are other details of construction in this wooden model which are different from the defendant's machine.

Int. 93. State generally the weight and size of each of the defendant's two machines—the roller and four-motion feed-machines.

A. They are each about six feet long, five feet high, and weigh about one ton each.

Int. 94. Look at the Complainant's Exhibits "Specimen Conical Quilted Skirt" and "Exhibit Specimen Skirt," and state whether either one of those skirts were made on either of the defendant's machines.

A. No; neither of them. I ascertained this fact from an inspection of the stitches in the exhibits, which stitches are not like the defendant's, and also from the fact that defendant's machines never made a quilting of the pattern shown in Plaintiff's "Exhibit Specimen Skirt No. 2," and because in Complainant's "Exhibit Specimen Conical Quilted Skirt," aside from the difference in the stitches between it and the defendant's skirt, I observe that there are twenty stitches in the side of each angle, whereas in the defendant's machine the number of stitches is different.

WILLIAM WIESE.

Subscribed and sworn to before me this 29th day of May, 1882.

ROBERT JACKSON,
Special Examiner.

J. BOYD ELIOT, defendant's expert, being recalled, testifies as follows:

Int. 95. Have you examined the complainant's models, and have you read Mr. Renwick's testimony concerning the said models, and what can you say concerning the correctness or incorrectness of said models, as compared with the defendant's machine?

A. I have examined said models and read the testimony referred to, and have made the comparison called for in the question, and I find that neither of said models are correct in any respect, but
127 are very much out of proportion; and as to the arrangement
of the working parts, do not at all represent the combination and arrangement of the operative parts of the defendant's machine.

But, to be more specific in speaking of these models, I will refer first to the model which is intended to represent a four-motion feed-machine, and I may say concerning said model that it is merely a suggestion or illustration of the process of operation of a four-motion feed-machine rather than the combination, arrangement, and working of the various working devices of the defendant's machines.

For example, the feed-dogs or arms that vibrate to and fro to carry the fabric along are attached to the rod which operates them in a backward and forward movement in such a loose manner that they can wabble about on the said shaft in almost any manner desired, to adapt them to any sort of vibratory movement required in the operation of the machine.

Whereas, in the defendant's machine, the feed-dogs, as I have already explained in my previous testimony, are attached firmly upon cast-iron arms about one-half an inch square, in cross-sections, and more than an inch in length, and which are bored out to fit snugly on a shaft at least one-half an inch in diameter, and these are held upon said shaft by set-screws, which hold them in a firm position upon the said shaft, so that there is no possibility of vibratory action of the feed-dogs upon the said shaft—not even one-eightieth of an inch, as suggested by Mr. Renwick in his testimony concerning said machine.

Furthermore, it will be seen, by referring to said exhibit, that the edges of the feeding surfaces, which I have explained would come in contact with the slots or holes in the cloth-plate under the conditions suggested by Mr. Renwick, have not become brightened or polished, as I illustrated they would be in the sketch which I made to illustrate the feeding devices in the defendant's four-motion feed-machine, and which is in evidence in this case, but, on the contrary, they are as rough as when originally made, and the rust is plainly apparent upon their edges; whereas, upon the opposite edges of said feeding devices, two of them are nicely polished, which

proves clearly that the side which would be the advancing
128 feed has not been advanced at all under any circumstances,
but rather the side upon which the fabric should not be advanced, and this accords exactly with the theory and mode of operation of the defendant's machine, as I have observed it; that the tendency is to constantly advance the heavier portion of the fabric faster through the machine (by the heavier portion of the fabric I mean the bottom of the skirt), and consequently the other portion, or the top, has to be assisted through the machine by the operator or by advancing the feed on that side, if the machine were adopted for such mode of operation.

But my observation teaches me that the said feeding devices are arranged to move as directly at a right angle with the shaft upon which they are fastened as it was possible to adjust them, and consequently I do not regard the combination and arrangement of devices in the complainant's model four-motion feed-machine as even attempting to illustrate one of the most important characteristics assumed to exist between the complainant's model and the defendant's machine.

I may also remark that the introduction of an eccentric shaft and outside gearing connected with the crank-shaft in complainant's model, for giving up-and-down motion to the feed-dogs, is wholly unlike anything that is represented in the defendant's machine; and I may also say that the rollers on top of the feeding surface are about three or four times as long as they could possibly be in the defendant's machine and therefore would have a very material injurious effect in adapting such a machine for the movements which the operator has to make in guiding the fabric to the sewing mechanism or through the machine.

Now, as to the complainant's model of the roller feed-machine, I can say that the feeding devices are so constructed and operated as to be intermittent in their motion, and only so; whereas in the defendant's machine they are "absolutely continuous," and notwithstanding Mr. Renwick's comparison between the double crank and the eccentrics, which he has so elaborately discussed in his testimony concerning the said model, and the plain reason for this difference of motion is that the defendant's machine employs two eccentric cams on the same shaft which have a continuous action
129 through three-fourths of their revolution, so that before one
of said cams has ceased to act to operate the feed the other has been acting for one-fourth of its revolution, and the consequence is that, by the combination of these two cams for operating the feeding-pawls, there is an overlap of one-fourth from each cam to maintain the continuity of motion of the feeding devices, and therefore neither the cranks, as represented in complainant's model, or the plain eccentrics which Mr. Renwick speaks of are the proper equivalents or substitutes for the three-fourths cams used in the defendant's roller feed-machine.

Of course, if the defendant used plain eccentrics in said machines there would be an intermittent motion, as illustrated by the cranks in the complainant's model, but the fact is the defendant uses the same shaped cams, as illustrated by the Defendant's Exhibit "Eccentric Cams," which I understand are the patterns from which the cams in the defendant's feeding-machines were made, and which cams I have compared with said patterns or templets and find them to correspond in outline.

As to the feed-rolls themselves in the said model, they are not at all a correct representation of the devices used in the defendant's machine, for the reason that in the defendant's machine the roller which is the actual feeding-roller has only two short feeding surfaces or short rolls, made with roughened surfaces for advancing the fabric, placed at each end of the machine and above the cloth-plate, so that the fabric to be quilted is merely advanced by the drawing action of said roughened surfaces clamping the fabric between the cloth-plate and the under side of the said rolls; whereas in the said model of the complainant there are five disks or sleeves as feeding devices upon one shaft, each of which are more than one inch in length, and another one, over two inches in length, at the left-hand side of the machine, and all of these have their upper surfaces projecting through the cloth-plate; consequently there is an entire absence of proper construction in the said model in attempting to represent the devices as shown in the defendant's machine.

Furthermore, I can say that the said feeding surface could not possibly exist in the defendant's machine, underneath the 130 cloth-plate, as said machine is organized, for the reason that all the shuttle carries work in close proximity to the under side of it and vibrates to and fro at right angles to the axis of the said feed-roller shaft.

Furthermore, there are no intermediate rolls or rolling surface in the defendant's machine as represented in the compression roll in the complainant's wooden model, which I have marked in pencil with the letter "A."

Int. 96. Mr. Renwick, the complainant's expert, has said, in referring to "Complainant's Exhibit Conical Quilted Skirt," in his answer to his fourth rebutting question, "that the average length of the complete wave on the concave side of the petticoat referred to is one and one-sixteenth inches or seventeen-sixteenths inches. The average length of a complete wave at the convex end of the petticoat is one and five-sixteenths of an inch scant or twenty-one sixteenths inches. The difference of the length of twenty stitches is therefore four-sixteenths of an inch. The difference of length of stitches in order to quilt that petticoat was therefore one-eightieth of an inch for each stitch,—*i. e.*, the feed at one end would have to move more than one-eightieth of an inch further than the feed at the other end." Now, will you please examine the Exhibit Conical Quilted Skirt, referred to by Mr. Renwick, and state whether you agree or disagree with him, and what conclusion you draw from your examination of said exhibit?

A. I have made the examination called for in the question, and I find that Mr. Renwick evidently arrives at his conclusions by averaging the length of the waves and the length of the stitches between the concave and the convex sides of said skirt, and therefore

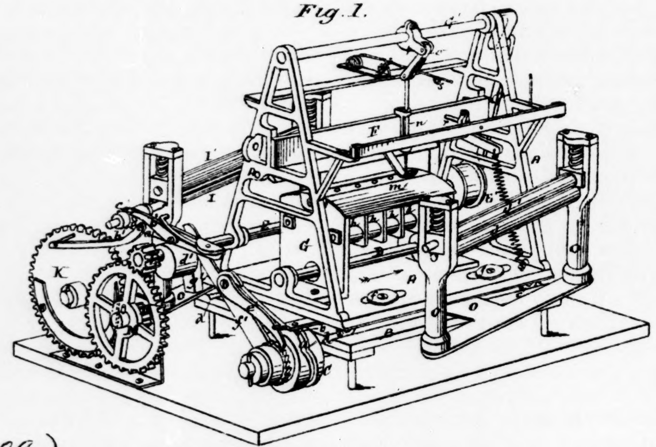
A. BECK.

Quilting-Machine.

No. 159,884.

Patented Feb. 16, 1875.

Fig. 1.



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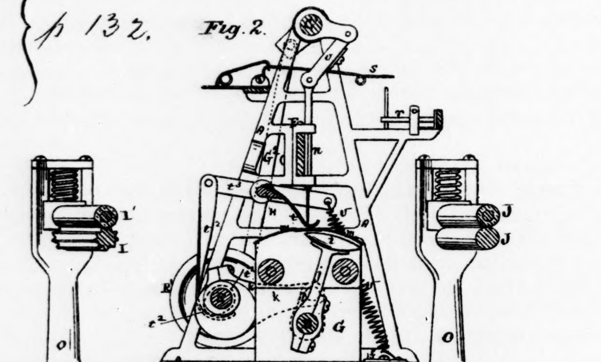
p 132.

Fig. 2.



Witnesses

Ewell A. Dick
Alex. L. Hayes

Inventor

August Beck
by atty,
Pollok & Bailey

reaches the result of one-eightieth of an inch to each stitch for advancing the feed at the lower edge or convex edge of the skirt, as compared with the upper or concave; but the fact is, that such a result of mathematical refinement is only obtained by taking the "average" of the waves and the "average" length of the stitches, for by a very casual comparison of the stitching done on said skirt it will show that the variations of the waves amount to from one-sixteenth to three-eighths of an inch, and therefore the mathematical accuracy of one-eightieth of an inch could not possibly exist in the feeding mechanism that directed said skirt to the needles 131 or sewing mechanism, but, on the contrary, proves exactly what I have maintained in testifying concerning the manufacture of such goods, and specially with reference to the use of what are known as four-motion feed-machines—that the material was practically under the control of the operator, and that by the use of such machines the fabric could be directed according to the will or pleasure of the operator, and that the feeding devices in the length of the waves, to which I have referred, clearly demonstrates the fact that said skirt could not have been quilted on a machine which was set to feed one-eightieth of an inch per stitch faster at one edge of the quilted surface than at the other, but, on the contrary, that it was entirely under the control of the operator, and is not more irregular in the length of its waves than a similar fabric would be produced on the ordinary sewing-machine.

And I may further remark that, by observing the various lengths of waves in the fabrics quilted in the defendant's machine, it is very apparent that the material is under the control of the operator, and is nothing like so accurately done as would appear from a feeding device set to increase the feed one-eightieth of an inch faster at one edge than at the other.

J. BOYD ELIOT.

Subscribed and sworn to before me this 29th day of May, 1882.

ROBERT JACKSON,
Special Examiner.

(Endorsed:) U. S. circuit court. Filed Nov. 19, 1883. Timothy Griffith, clerk.

(Here follows diagram marked p. 132.)

133 & 134

DEFENDANT'S EXHIBIT A.

UNITED STATES PATENT OFFICE.

AUGUST BECK, of New York, N. Y., assignor to Louis Dryfoos, of same place.

Improvement in Quilting-Machines.

Specification forming part of Letters Patent No. 159,884, dated February 16, 1875; application filed January 12, 1875.

To all whom it may concern:

Be it known that I, August Beck, of the city, county, and State of New York, have invented certain new and useful improvements in quilting-machines, of which the following is a specification:

The machine in which my invention is comprised is a sewing-machine, which is designed with special reference to quilting fabrics. It is adapted, however, for sewing ornamental patterns of various kinds.

I combine with feed mechanism, which holds the fabric at the proper times, feeding it along through the machine, a sewing mechanism, comprising a cloth-plate and two or more distinct sets of stitch-forming devices, with the usual take-up and tension for each, which sewing mechanism has a movement transverse to the line of feed and is independent of the feed mechanism.

I also combine said laterally-moving sewing mechanism with a feed mechanism adjustable to feed the cloth in a line at various angles to the line of needles, whereby the lines of stitching can be varied and brought nearer or more—less closely together, as occasion may require.

To enable others skilled in the art to understand and use my invention, I shall proceed to describe the manner in which the same is or may be carried into effect by reference to the accompanying drawing, in which—

Figure 1 is a perspective view, and Fig. 2 is a longitudinal vertical central section of a machine embodying my invention.

The stitch-forming devices are mounted in frame A, which has a lateral movement on the base-plate B of the machine. This lateral movement is produced by a revolving peripherally cam-grooved wheel, C, in whose cam-groove *a* projects a stud or friction-roller, *b*, carried by the frame A. The lateral movement of the frame is facilitated by means of rollers *c* on its under face, which run in grooves *d* in the base-plate. The frame is assured in position by upright friction-rollers *e*, which project from the base-plate through slots in the frame, and have washers *f* on their upper ends to hold the frame down in place on the base-plate. On the bed of the frame are erected standards G, which support the shuttle-races *h*, in which move the shuttles *i*, one for each needle. Each shuttle is carried by a radial arm or sector, *j*, the outer end of which forms the shuttle-carrier; and these arms project from a common rock-shaft, D, mounted in bearings on the frame A, deriving its rocking movement from an eccentric on the driving-shaft E, through the medium of a connecting-rod, *k*, which is jointed to an arm, *l*, projecting from shaft D, and at the other end encircles the eccentric. The driving-shaft is supported in bearings on frame A, and is driven by belting passing around belt-pulley E′. Above the shuttles is the cloth-plate *m*, through which the needles work. F is the stock or head that supports the needles it is fixed to, and extends between the side standards of frame A. It carries bearings for each needle-bar *n*, through which the needle-bars play up and down in the usual way. I have not deemed it necessary to represent more than one needle, needle-bar, and adjuncts. It will be understood that as many such are employed as may be required.

The needle-bar is jointed at its upper end to a connecting-rod, *o*, which is jointed at its other end to a crank, *p*, on the upper shaft G^1, which has a rocking movement derived from driving-shaft E by a connecting-rod, G^2, jointed at one end to a crank-pin on belt-pulley E′, and at the other end to a projecting arm on shaft G^1. Each stitch-forming mechanism is provided with a tension, *r*, and take-up *s*, of ordinary or suitable construction, the same being mounted on and carried by frame A. Each stitch-forming mechanism has also a presser-foot, *t*. All the presser-feet are mounted on a journaled bar, H, which, when the feed takes place, is operated to lift the presser-feet from the goods by means of a cam, t^1, on driving-shaft E, which is in contact with a curved arm, t^2, fast to a projection, t^3, on the bar H. The arm is held against the cam by a spring, *v*, which normally holds the presser-feet down upon the cloth-plate with a yielding pressure.

135 The feed of the cloth is effected by feed-rolls I I′ at the rear of the machine, which draw the cloth through the machine, and have for this purpose an intermittent rotary movement that takes place while the needles are out of the cloth. One of the rolls is mounted in vertically-movable boxes, and is pressed down toward the other by springs, as shown. In front of the machine is a set of rolls, J J′, identical with rolls I I′, save that they have no positive movement of their own, and serve simply to maintain the goods stretched and under a certain tension.

The feed is operated by means of a rocking-lever, *a′*, on the axis of the lower roll, I, which carries a pawl, *b′*, held by a spring against, and so as to engage, a ratchet-wheel, *c′*, fast on the axes of lower roll I. The rocking lever rests on a cam, *d′*, on driving-shaft E, which cam is of sufficient length to allow it to move laterally with the sewing-frame without removing it from under the pawl-lever.

The lateral movement of the sewing-frame is obtained by means of a ratchet fixed on the hub of the peripherally cam-grooved wheel C, which is engaged by a spring-pressed pawl, *e′*, on a rocking lever, *f′*, that is mounted on the axis of wheel C. The free end of this lever rests on a cam, *g′*, on driving-shaft E, and the ratchet with the wheel C moves a distance of one tooth at every stitch.

The cam-groove shown in the drawing gives the sewing-frame an equal back-and-forth movement. This movement, in connection with the regular continuous movement of the feed, will cause the stitching to be done in zigzag parallel lines. The feed movement and the movement of the sewing-frame take place while the needles are out of the cloth. By varying the shape and outline of the peripheral cam-groove of wheel C the lines of stitching may be made to produce many various patterns. Length of feed and the length of the intermittent movements of the sewing-frame should be uniform, so that the stitches may be even and of the same uniform length.

In order to do quilting-work I add to the pawl-lever a' a fixed arm, h', provided at its outer end with a laterally-projecting stud that is intended to work under a semicircular cam-rib, i', on the face of the toothed wheel K. During one half of the revolution of this wheel the stop-arm h' is free from the cam i', and the feed operates. During the other half of the revolution of the wheel the stop-arm comes under the cam and is thereby depressed, so as to raise the pawl-lever a' high enough to prevent it from having contact with its operating cam. The feed therefore ceases. The stop-wheel makes one revolution to one back-and-forth movement of the sewing-frame. It is so arranged that it engages the stop-arm, and consequently arrests the feed while the sewing-frame moves in the direction of the arrow in Fig. 1. When, on the other hand, the frame finishes this movement and begins to move in the opposite direction, the stop-wheel releases the arm, and the feed thus operates. The distance which separates any one needle from the needle adjoining it on either side should, for quilting purposes, equal the length of traverse of the sewing-frame.

The stop-wheel K derives its movement from a long pinion, L, on driving-shaft E, through the medium of the toothed wheel M, mounted on the stationary frame of the machine, which engages pinion L, and is provided with a pinion, N, that engages stop-wheel K. The effect of this arrangement is to cause the lines of stitching to intersect and form what is generally known as quilting.

It is desirable, when using the machine for quilting, to feed the cloth obliquely through the machine, and for this purpose the feeding-rolls must, of course, be set at an oblique angle to the line of traverse of the sewing-frame, as shown in the drawing, in which the feed-rolls are set at such an angle as to produce regular rows of stitching, which intersect each other to form a regular diamond-shaped pattern.

To bring about this result I make the feed adjustable in this respect. The adjustment may obviously be effected in many ways. I have represented in the drawings the method I prefer. The feed and tension rolls are mounted in a frame, O, which turns in a horizontal plane on a vertical axis, P, and can be set, therefore, at any angle that may be desired. After setting the frame in position it may there be held by any suitable clamp.

To allow this movement of the feed-frame without interfering with the engagement of the stop-arm and stop-wheel the arm may fit on a rod or stud projecting from the feed-pawl lever, on which rod or stud the arm can be moved in one direction or the other, as required, and there held by a set-screw or other clamp. By throwing back and disengaging the pawl that gives motion to the periph-

2 Sheets—Sheet 1

A. BECK.

QUILTING-MACHINE.

No. 190,184. Patented May 1, 187

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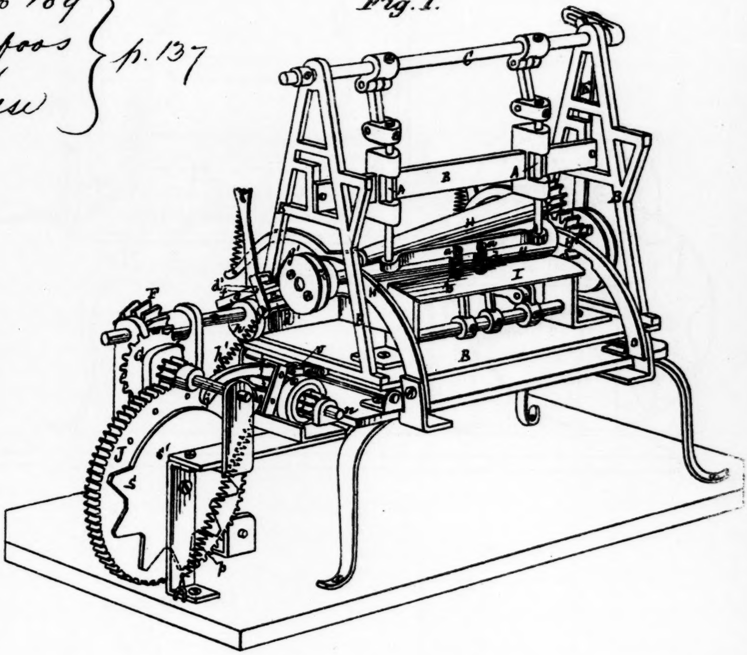
Fig. 1.



Witnesses

Ewell A. Dick

D P Howe

Inventor:

August Beck by
atty Pollok & Bailey

2 Sheets—Sheet 2.

A. BECK.

QUILTING-MACHINE.

No. 190,184. Patented May 1, 1877.

No 109
Dry goods
v
Wiese
} p 138

Fig. 2.

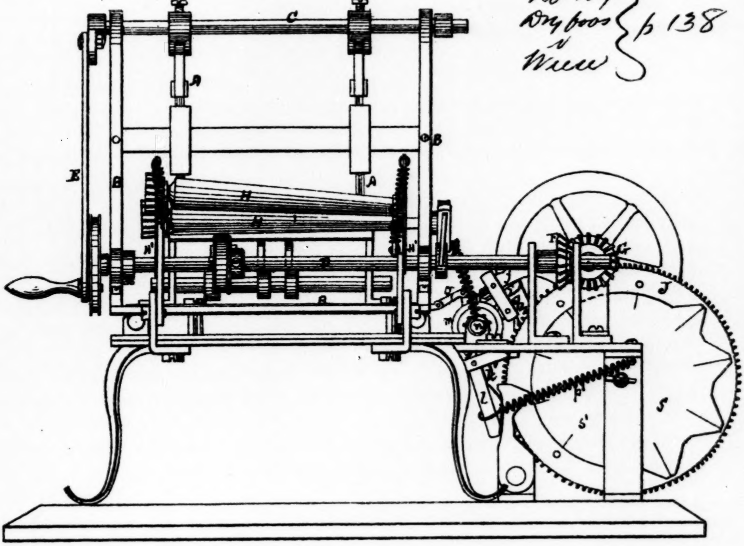


Fig. 3.

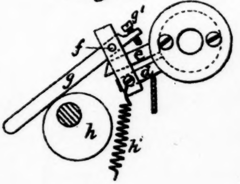
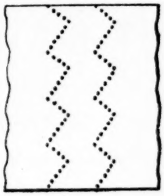


Fig. 4.



Witnesses

Evella Dick

D. P. Cowl

Inventor

August Beck by
attys Pollok & Bailey

erally cam-grooved wheel, the sewing-frame will be stationary, and the sewing will be done in straight lines.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by letters patent, is—

1. The laterally-reciprocating sewing-frame, carrying the stitch-forming mechanisms, in combination with an automatic independent feed, which operates when said frame moves in one direction, and is at rest when said frame moves in the opposite direction, substantially as set forth.

2. The combination, with the series of stitch-forming mechanisms, of feed-rolls set obliquely to the same, and operating to feed the cloth through the machine obliquely to the line of stitch-forming mechanisms, substantially as set forth.

3. The laterally-reciprocating sewing-frame in combination with
an independent feed, placed at an angle oblique to the line
136 of traverse of said frame, operating to feed the cloth when
the frame moves in one direction and remaining at rest when
the frame moves in the opposite direction, substantially as set forth.

4. The combination of the laterally-to-and-fro moving sewing-frame, carrying the stitch-forming mechanisms, and the feed mechanism, adjustable to an angle more or less oblique to the line of traverse of the sewing-frame, substantially as shown and set forth.

5. The feed-rolls and tension-rolls, in combination with a supporting-frame adjustable upon a vertical axis to vary the angle of obliquity of said rolls, relatively to the sewing mechanism, substantially as set forth.

In testimony whereof I have hereunto signed my name this 6th day of January, A. D. 1875.

AUGUST BECK.

Witnesses:
A. C. BRADLEY.
EWELL A. DICK.

(Here follow diagrams marked pp. 137 & 138.)

139 DEFENDANT'S EXHIBIT B.

UNITED STATES PATENT OFFICE.

AUGUST BECK, of New York, N. Y., assignor to Louis Dryfoos and Joseph Dryfoos, of same place.

Improvement in Quilting-Machines.

Specification forming part of Letters Patent No. 190,184, dated May 1, 1877; application filed February 27, 1877.

To all whom it may concern:

Be it known that I, August Beck, of the city, county, and State of New York, have invented certain new and useful improvements in quilting-machines, of which the following is a specification:

The machine to which my invention relates is a sewing-machine intended to be used for quilting fabrics. It may be used, however, for sewing ornamental patterns of various kinds.

My invention consists of certain improvements on the quilting-machine described and shown in my letters patent No. 159,884, dated February 16, 1875, these improvements having reference to the presser-foot, the feed, and the mechanism for laterally reciprocating the sewing-frame. They will be explained by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of the machine. Fig. 2 is a rear elevation of the same. Fig. 3 is a side elevation, on an enlarged scale, of the mechanism through the intermediary of which the feed is effected. Fig. 4 is a pattern of the stitching made by the machine.

I shall give but a general and brief description of such parts of the machine as are not immediately related to my improvements. The general organization does not materially differ from that of the machine described in my above-recited letters patent.

In the use of my patented machine difficulty was experienced in the use of the presser-feet, which, under the arrangement described in the patent, were apt to rub and drag on the cloth, which was, therefore, at times caused to follow the reciprocating movement of the sewing-frame. The arrangement itself was, moreover, somewhat complicated and cumbersome.

My present improvement consists in combining, with each and every needle bar or holder *a* an annular vertically-yielding presser-foot, *b*, attached to, and moving up and down with, the bar, and surrounding the needle. The presser-feet thus press the goods only during the formation of the stitches. They rise with the needles, and their pressure on the goods is entirely taken off when the needles are out of the cloth.

They are made vertically yielding by being in part composed of spirally-coiled wire springs, as shown.

The needle-holding frame (marked A) moves up and down in guides in the laterally-reciprocating sewing-frame B, this up-and-down movement being imparted from a rock-shaft, C, which is operated by a crank and driving-shaft, D, through the medium of a connecting-rod, E, jointed to a slotted arm on shaft C, in which arm its joint pin is adjustable to or from the axis of shaft C, in order to regulate the length of needle-stroke. The driving-shaft D is rotated by gearing F G, the gear-wheel F having fixed bearings, and being connected with the shaft D by a spline-and-groove connection, which permits the shaft to laterally reciprocate with the sewing-frame independently of the driving-gear.

In my patented machine the regular forward feed of the goods was effected by feed-rollers intermittently rotated by means of a pawl and ratchet. No adequate provision was there made for a change of feed.

I now use a different mechanism for actuating the feed-rolls, and so organize it that the length of feed may be varied at pleasure.

The feed-rolls are shown at H. They are intended, in this instance, to feed the conical bodies of skirts or skirt-borders, and are, therefore, for this purpose, made conical. The cloth to be sewed passes over the cloth-plate I, under and back of the lower roll; thence up between the two rolls, and to the front of the upper roll, over which it finally passes. The rolls are made conical only for the purpose above mentioned. To feed straight goods they are made cylindrical. They do not move with the sewing-frame. They have no movement of lateral reciprocation, but revolve in bearings formed in a stationary frame, H′. They act intermittently, resting during the formation of the stitch, and feeding the goods when the needles are out of the cloth. The intermittent movement of rotation is produced as follows:

140 The lower roll is the one that is positively acted on. The other roll has movable boxes acted on by springs, which cause it to bear with a yielding pressure on the lower roll, the two rolls being geared together, as shown.

The shaft or journal of the lower roll is, at one end, prolonged to extend beyond its bearing, and on this prolonged end is mounted a hub, the periphery of which is encircled by a spring ring-like clasp, *c*, which is not a continuous ring, but has separate ends, one of which, *d*, carries a yoke, *d′*. The other end, *e*, directly above the end *d*, is free, and normally is somewhat separated from the other. Pivoted at *f* in the yoke *d* is a lever, *g*, whose shorter arm overhangs the end *e*, and whose longer arm is in contact with a cam, tappet, or eccentric, *h*, on the driving-shaft, said part *h* being of width sufficient to allow it to reciprocate with the sewing-frame without quitting the lever.

When the longer arm of the lever is raised by the cam its shorter arm bears on the end *e* of the spring-clasp, and first forces it down toward the other end, and so causes the clasp to clutch the hub. The continued movement of the lever now causes the hub to make a movement of partial rotation, thus operating the feed-roll. The extent of movement of the roll is determined by the amount of lost motion of the lever, and this lost motion is regulated by means of a screw, *g*, in the shorter arm of the lever, which may be caused to approach the end *e* of the clasp more or less, as required.

I thus, in effect, have a friction-clutch which is caused to engage and operate the feed by means of a vibratory lever, which is caused to act on the clutch sooner or later in its stroke, according to the length of stitch required. The lever is held down to the eccentric *h* by a spring, *h′*.

The same kind of mechanism is employed to give movement to the laterally-reciprocating sewing-frame. In this case, however, as seen in the drawing, the mechanism is duplicated, one friction-clutch, *i*, and lever *j* being required to move the frame in one direction, and one friction-clutch, *k*, and lever *l* being required to move the frame in the other direction. The mechanisms are mounted one on one side and the other on the other side of a central flange, *m*, on a shaft, *n*, which is rocked back and forth by the action of the clutches and is connected with the sewing-frame by a rod, *o*, jointed at one end to an arm projecting from the sewing-frame and at the other end to a radial arm projecting from the shaft *n* or the flange *m* thereon.

The levers *j* and *l* are held by springs *p p′* against the pattern-cams, by which they, respectively, are acted on, and this brings me to the last portion of my improvements, which relates to the pattern mechanism or mechanism for giving to the sewing-frame the lateral movement required for the particular pattern to be made.

In my patented machine I use for this purpose a peripherally cam-grooved pattern-wheel. This wheel is required to be changed not only for each regular feed—*i. e.*, for varying length of stitches—but also for every figure or pattern. To remedy inconveniences arising from this plan I have now adopted a permanent wheel, J, gearing with the driving mechanism and carrying on its opposite faces the cams *s*, which operate the levers of the friction-clutches. These cams are removable from the wheel and may be replaced by others, so that with the same wheel any number of pattern-cams can be interchangeably used. The cam-points *s* may be in one piece with the central disk S′ or they may be made separate from the disk and attached independently of one another to the wheel. The wheel is of a size to make one element of the design or pattern, so that at each revolution of the wheel one element of the design will be completed. For instance, the cams shown in the drawing will make the zigzag pattern shown in Fig. 4, and that pattern is composed of a number of elements, each of which consists of up-and-down lines in **V**-form. While the series of cams on one side of the wheel act on one lever the other lever is opposite the open space on the cam-disk on the other side of the wheel. Thus the one set of cams, acting on one lever by a series of intermittent impulses, draws the sewing-frame in one direction. Those cams then become inactive and the opposite set commences to act on the other lever, causing the frame to move in a similar manner in the other direction, thus, in conjunction with the regular forward feed, causing a pattern to be produced like that shown in Fig. 4.

I have described only so much of the machine as required to illustrate my improvements. The stitch-forming mechanisms, one for each needle, may be of any approved pattern, embracing tension, take-up, spool-holder, shuttle or hook for the under thread, &c.

Having described my improvements, what I claim and desire to secure by letters patent is—

1. The combination, substantially as set forth, with a series of vertically-reciprocating needles of a like number of vertically-yielding and elastic annular presser-feet, one for each needle, each presser-foot surrounding its needle and attached to and moving with the needle bars or holder and rising from the cloth-plate when the feed takes place.

2. The combination of the laterally-reciprocating sewing-frame and independent forward feed with a series of needles carried by said sewing-frame and a like number of vertically-yielding 141 annular presser-feet, one for each needle, each presser-foot surrounding its needle and attached to and moving with the needle bar or holder, as shown and set forth.

3. The described mechanism for operating the feed, consisting of a friction-clutch clasping the feed-shaft, in combination with a vi-

2 Sheets—Sheet 1.

A. BECK.

Assignor to L. & J. Dryfoos.

Sewing-Machines.

No. 8,063. **Reissued Jan. 29, 1878.**

No. 109.
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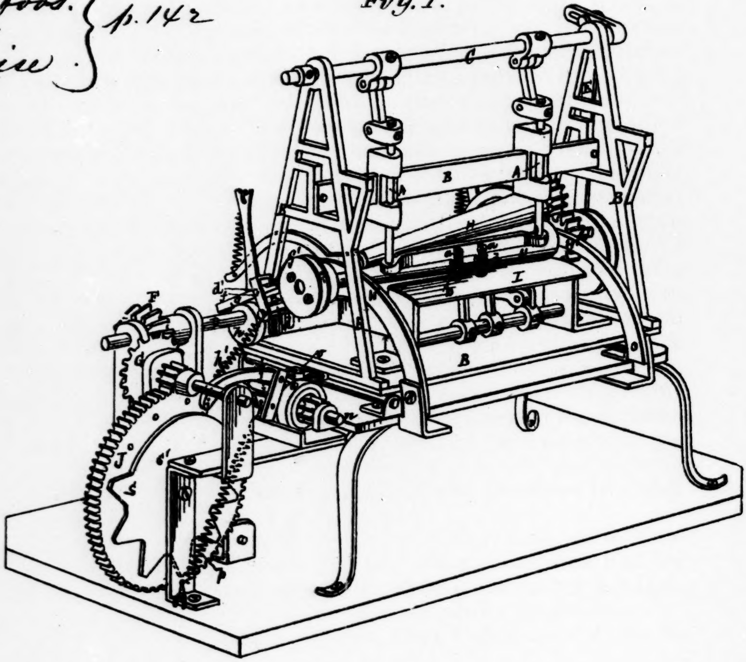
Fig. 1.



E. a. Dick
Alex. Scott

August Beck
by A Pollok
his attorney

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A. BECK.

Assignor to L. & J. Dryfoos.

Sewing-Machines.

No. 8,063. Reissued Jan. 29, 1878.

Fig. 2.

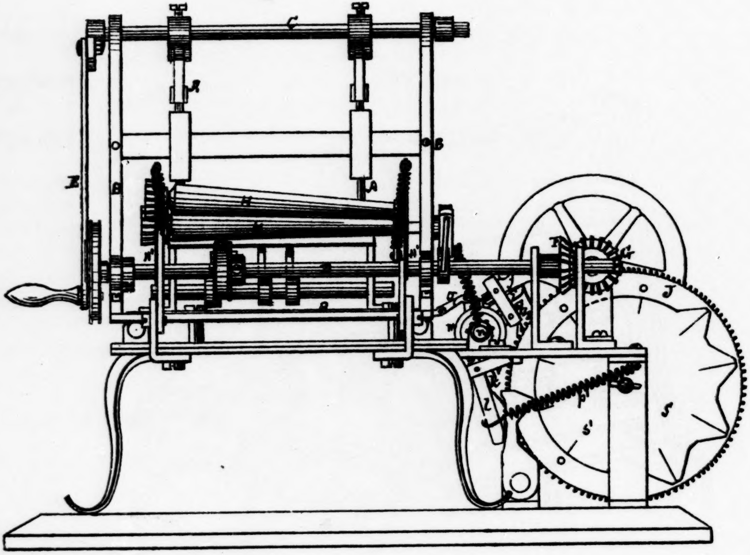


Fig. 3.

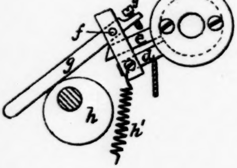
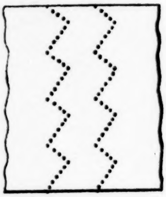


Fig. 4



No. 109
Dryfoos
v
Wiese } p. 143

August Beck
by A. Pollok
his attorney

E. A. Dick
Alex. Scott

bratory pivoted lever, supported on one end of the clutch and having one of its arms overhanging but not attached to the other and free end of the clutch, substantially as set forth, so that the movement of said lever shall cause the clutch first to close upon the shaft and then to rotate the same, as set forth, and this I claim whether the said mechanism be used to operate the forward or the lateral feed.

4. The combination of the friction-clutch, the feed-shaft embraced by the same, and the vibratory lever provided at that end which acts on the clutch with means of adjustment, whereby the lost motion of the lever may be increased or decreased at pleasure to regulate the length of the feed.

5. The combination with the sewing-frame of the pattern-wheel and removable pattern-cams, one set on each face of the wheel, the one set designed to move the sewing-frame in one direction, the other set in the other direction, each set acting alternately on the frame and both being removable to allow different sets of pattern-cams to be interchangeably used on the same wheel.

6. The pattern-wheel with removable pattern-cams, one set on each face of the wheel, in combination with friction-clutches and their operating levers, one set for each set of pattern-cams, and a rock-shaft, on which said clutches are mounted, connected with and imparting a laterally-reciprocating movement to the sewing-frame, substantially as herein shown and set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

AUGUST BECK.

Witnesses:
W. S. DEHART.
GEORGE F. LANGBEIN.

(Here follow diagrams marked pp. 142 & 143.)

144

DEFENDANT'S EXHIBIT C.

UNITED STATES PATENT OFFICE.

AUGUST BECK, of New York, N. Y., assignor to Louis Dryfoos and Joseph Dryfoos.

Improvement in Sewing-Machines.

Specification forming part of Letters Patent No. 190,184, dated May 1, 1877; reissue No. 8063, dated January 29, 1878; application filed January 2, 1878.

To all whom it may concern:

Be it known that I, August Beck, of the city, county, and State of New York, have invented certain new and useful improvements in quilting-machines, of which the following is a specification:

The machine to which my invention relates is a sewing-maching to be used for quilting fabrics. It may be used, however, for sewing ornamental patterns of various kinds.

My invention consists of certain improvements on the quilting-machine described and shown in my letters patent No. 159,884, dated February 16, 1875, these improvements having reference to the presser-foot, the feed, and the mechanism for laterally reciprocating the sewing-frame. They will be explained by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of the machine. Fig. 2 is a rear elevation of the same. Fig. 3 is a side elevation, on an enlarged scale, of the mechanism through the intermediary of which the feed is effected. Fig. 4 is a pattern of the stitching made by the machine.

I shall give but a general and brief description of such parts of the machine as are not immediately related to my improvements. The general organization does not materially differ from that of the machine described in my above-recited letters patent.

In the use of my patented machine difficulty was experienced in the use of the presser-feet, which, under the arrangement described in the patent, were apt to rub and drag on the cloth, which was, therefore, at times caused to follow the reciprocating movement of the sewing-frame. The arrangement itself was, moreover, somewhat complicated and cumbersome.

My present improvement consists in combining with each and every needle bar or holder, *a*, an annular vertically-yielding presser-foot, *b*, attached to, and moving up and down with, the bar, and surrounding the needle. The presser-feet thus press the goods only during the formation of the stitches. They rise with the needles, and their pressure on the goods is entirely taken off when the needles are out of the cloth.

They are made vertically yielding by being in part composed of spirally-coiled wire springs, as shown.

The needle-holding frame (marked A) moves up and down in guides in the laterally-reciprocating sewing-frame B, this up-and-down movement being imparted from a rock-shaft, C, which is operated by a crank and driving-shaft, D, through the medium of a connecting-rod, E, jointed to a slotted arm on shaft C, in which arm its joint-pin is adjustable to or from the axis of shaft C, in order to regulate the length of needle-stroke. The driving-shaft D is rotated by gearing F G, the gear-wheel F having fixed bearings, and being connected with the shaft D by a spline-and-groove connection, which permits the shaft to laterally reciprocate with the sewing-frame independently of the driving-gear.

In my patented machine the regular forward feed of the goods was effected by feed-rollers intermittingly rotated by means of a pawl and ratchet. No adequate provision was there made for a change of feed, and when conical bodies of skirts or skirt-borders were to be quilted it was necessary to drag the material through on one side, at the same time crowding it back on the other, as is done on ordinary sewing-machines. This, while being easily and readily effected on such machines, and the material being turned under and around a single needle, without any inconvenience to the operator, and without injury to the fabric, or to the parts of the mechanism which hold the material, cannot be done, in connection with a gang of needles, with a feeding mechanism holding the material both intermittingly during the intervals of stitches and continuously between sets of rollers, without great manual difficulty to the operator and without such strain upon the material and friction upon the feeding mechanism as will endanger the quality of the work and the operation of the machine.

To remedy this I now use a different mechanism for actuating the feed-rolls, and so organize it that the length of feed may be varied at pleasure. I also use feed-rolls, as shown at H, intended to feed the conical bodies of skirts or skirt-borders. They are for
145 this purpose made of conical shape, and of such taper or relative diameters at their respective ends as to conform to the shape of the skirt or border to be quilted.

The cloth to be sewed passes over the cloth-plate I, under and back of the lower roll; thence up between the two rolls, and to the front of the upper roll, over which it finally passes. The rolls are made conical only for the purpose above mentioned. To feed straight goods they are made cylindrical. They do not move with the sewing-frame. They have no movement of lateral reciprocation, but revolve in bearings formed in a stationery frame, H′. They act intermittingly, resting during the formation of the stitch, and feeding the goods when the needles are out of the cloth. The intermittent movement of rotation is produced as follows: The lower roll is the one that is positively acted on. The other roll has movable boxes, acted on by springs, which cause it to bear with a yielding pressure on the lower roll, the two rolls being geared together, as shown.

The shaft or journal of the lower roll is at one end prolonged to extend beyond its bearing, and on this prolonged end is mounted a hub, the periphery of which is encircled by a spring-ring-like clasp, *c*, which is not a continuous ring, but has separate ends, one of which, *d*, carries a yoke, *d′*. The other end *e*, directly above the end *d*, is free, and normally is somewhat separated from the other. Pivoted at *f* in the yoke *d* is a lever, *g*, whose shorter arm overhangs the end *e*, and whose longer arm is in contact with a cam, tappet, or eccentric, *h*, on the driving-shaft, said part *h* being of a width sufficient to allow it to reciprocate with the sewing-frame without quitting the lever.

When the longer arm of the lever is raised by the cam, its shorter arm bears on the end *e* of the spring-clasp, and first forces it down toward the other end, and so causes the clasp to clutch the hub. The continued movement of the lever now causes the hub to make a movement of partial rotation, thus operating the feed-roll. The extent of movement of the roll is determined by the amount of lost motion of the lever, and this lost motion is regulated by means of a screw, *g′*, in the shorter arm of the lever, which may be caused to approach the end *e* of the clasp, more or less, as required. I thus, in effect, have a friction-clutch, which is caused to engage and operate the feed by means of a vibratory lever, which is caused to act on the clutch sooner or later in its stroke, according to the length of stitch required. The lever is held down to the eccentric *h* by a spring, *h′*.

The same kind of mechanism is employed to give movement to the laterally-reciprocating sewing-frame. In this case, however, as seen in the drawing, the mechanism is duplicated, one friction-clutch, *i*, and lever *j* being required to move the frame in one direction, and one friction-clutch, *k*, and lever *l* being required to move the frame in the other direction. The mechanisms are mounted one on one side, and the other on the other side of a central flange, *m*, on a shaft, *n*, which is rocked back and forth by the action of the clutches, and is connected with the sewing-frame by a rod, *o*, jointed at one end to an arm projecting from the sewing-frame, and at the other end to a radial arm projecting from the shaft *n* or from the flange *m* thereon.

The levers *j* and *l* are held by springs *p p'* against the pattern-cams, by which they, respectively, are acted on; and this brings me to the last portion of my improvements, which relates to a pattern mechanism, or mechanism for giving to the sewing-frame the lateral movement required for the particular pattern to be made.

In my patented machine I use for this purpose a peripherally cam-grooved pattern-wheel. This wheel is required to be changed not only for each regular feed—*i. e.*, for varying length of stitches—but also for every figure or pattern. To remedy inconveniences arising from this plan I have now adopted a permanent wheel, J, gearing with the driving mechanism, and carrying on its opposite faces the cams *s*, which operate the levers of the friction-clutches. These cams are removable from the wheel, and may be replaced by others, so that with the same wheel any number of pattern-cams can be interchangeably used. The cam-points *s* may be in one piece with the central disk S', or they may be made separate from the disk, and attached independently of one another to the wheel. The wheel is of a size to make one element of the design or pattern, so that at each revolution of the one element of the design will be completed. For instance, the cams shown in the drawing will make the zigzag pattern shown in Fig. 4, and that pattern is composed of a number of elements, each of which consists of up-and-down lines in **V** form. While the series of cams on one side of the wheel act on one lever the other lever is opposite the open space on the cam-disk on the other side of the wheel. Thus the one set of cams, acting on one lever by a series of intermittent impulses, draws the sewing-frame in one direction. Those cams then become inactive, and the opposite set commences to act on the other lever, causing the frame to move in a similar manner in the other direction, thus, in conjunction with the regular forward feed, causing a pattern to be produced like that shown in Fig. 4.

I have described only so much of the machine as required to illustrate my improvements. The stitch-forming mechanisms, one for each needle, may be of any approved pattern, embracing tension, take-up, spool-holder, shuttle, or hook for the under thread, &c.

Having described my improvements, what I claim, and desire to secure by letters patent, is—

1. The combination, with a series of vertically-reciprocating

needles mounted in a laterally-reciprocating sewing-frame, of 146 conical feed-rolls, acting intermittingly during the intervals of the formation of stitches, substantially as herein shown and described.

2. The combination, substantially as set forth, with a series of vertically-reciprocating needles, of a like number of vertically-yielding and elastic annular presser-feet, one for each needle, each presser-foot surrounding its needle, and attached to and moving with the needle bar or holder, and rising from the cloth-plate when the feed takes place.

3. The combination of the laterally-reciprocating sewing-frame and independent forward feed with a series of needles carried by said sewing-frame, and a like number of vertically-yielding annular presser-feet, one for each needle, each presser-foot surrounding its needle, and attached to and moving with the needle bar or holder, as shown and set forth.

4. The described mechanism for operating the feed, consisting of a friction-clutch clasping the feed-shaft, in combination with a vibratory pivoted lever supported on one end of the clutch, and having one of its arms overhanging, but not attached to, the other and free end of the clutch, substantially as set forth, so that the movement of said lever shall cause the clutch first to close upon the shaft, and then to rotate the same, as set forth, whether the said mechanism be used to operate the forward or lateral feed.

5. The combination of the friction-clutch, the feed-shaft embraced by the same, and the vibratory lever provided at that end, which acts on the clutch, with means of adjustment, whereby the lost motion of the lever may be increased or decreased at pleasure, to regulate the length of the feed.

6. The combination, with the sewing-frame, of the pattern-wheel and removable pattern-cams, one set on each face of the wheel, the one set designed to move the sewing-frame in one direction, the other set in the other direction, each set acting alternately on the frame, and both being removable to allow different sets of pattern-cams to be interchangeably used on the same wheel.

7. The pattern-wheel, with removable pattern-cams, one set on each face of the wheel, in combination with friction-clutches and their operating-levers, one set for each set of pattern-cams, and a rock-shaft, on which said clutches are mounted, connected with and imparting a laterally-reciprocating movement to the sewing-frame, substantially as herein shown and set forth.

In testimony whereof I have hereunto signed my name this 28th day of December, A. D. 1877.

AUGUST BECK.

Witnesses:
GEORGE F. LANGBEIN.
W. S. D. EHART.

147 At a stated term of the circuit court of the United States of America for the southern district of New York, in the second circuit, held at the United States court-rooms, in the city of New

York, on Wednesday, the twenty-first day of November, in the year of our Lord one thousand eight hundred and eighty-three.

Present: The Honorable Hoyt H. Wheeler, judge.

LOUIS DRYFOOS *vs.* WILLIAM WIESE.

The above cause coming on for final hearing upon pleadings and proofs, Mr. Edmund Wetmore is heard in behalf of complainant.

(Further argument adjourned to 22nd inst.)

148 At a stated term of the circuit court of the United States of America for the southern district of New York, in the second circuit, held at the United States court-rooms, in the city of New York, on Thursday, the twenty-second day of November, in the year of our Lord one thousand eight hundred and eighty-three.

Present: The Honorable Hoyt H. Wheeler, judge.

LOUIS DRYFOOS *vs.* WILLIAM WIESE.

Argument in the above cause being resumed this day pursuant to adjournment, Mr. Edmund Wetmore concludes in behalf of complainant. Mr. Gilbert M. Plympton is heard in behalf of defendant.

Curia advisari vult.

And thereupon the complainant prays an appeal in open court.

Appeal allowed.

149 Circuit Court of the United States, Southern District of New York. In Equity.

LOUIS DRYFOOS *against* WILLIAM WIESE.

This suit is brought upon reissued letters patent No. 9097, granted February 24, 1884, to August Beck, assignor to the orator, for an improvement in quilting-machines. The original was No. 190,184, dated May 1, 1877. It was reissued in No. 8063, dated January 29, 1878, and surrendered for the reissue in suit. The improvement was and is stated in the original and reissues to be for improvements on the quilting-machine shown in letters patent No. 159,884, dated February 16, 1875, granted to the same inventor. That machine was for quilting by gangs of needles in zigzag parallel lines, and was fed by cylindrical rolls having an intermittent rotary
150 motion, which would move the cloth while the needles were out of it, and could be arranged to feed in straight lines, direct or oblique. The original of the patent in suit showed different mechanism for actuating the feed-rolls, so that the length of stitch could be varied at pleasure, and conical rolls having an intermittent motion to feed the conical bodies of skirts and skirt-borders in a circular direction when the needles were out of the cloth as well as cylindrical rolls for straight goods and other improvements upon other parts of the machine, and had claims for the feed mechanism and improvements upon the other parts of the machine, but none of the conical feed-rolls. The first reissue further described the conical feed-rolls as made of such taper as to conform to the shape of the

skirt or border to be quilted, and claimed the combination of the
series of needles with the conical feed-rolls acting intermittently in
place of one of the other claims.
151 The reissue in suit still further describes the conical feed-rolls
as the embodiment of a feed device which extends substantially
throughout the width of the conical strip of goods, and
as it departs from the shorter curved edge and approaches the longer
curved edge is adapted to have a proportionately increased range of
feed movement, so that it will feed the conical strip of goods in the
requisite curved path evenly and without any injurious strain or
drag, and further claims the combination, with the gang of sewing
mechanism and the cloth-plate which supports the goods under
them, of a feed device operating intermittingly in the intervals between
the formation of the stitches which extends and operates
substantially across the conical strip of goods, and which, as it departs
from the shorter curved edge and approaches the longer
curved edge of the goods, is adapted to have a proportionately increased
range of feed movement. The defendant is engaged in
using a quilting-machine for quilting conical goods, having
152 a gang of needles and short cylindrical feed-rollers at each
edge of the goods, which they feed in a circular direction by
moving at different rates of speed constantly, the needles having a
forward movement corresponding to that of the cloth while in it,
and also one with a four-motion feed, which is capable of feeding
in a circular direction by lengthening the feed at the longest edge
of the goods, but is not shown to have been so used or intended to
be so used. The validity of the reissue and infringement of it, if
valid, are denied.

Beck well appears to have meritoriously invented effective means
for giving circular direction to the feed of quilting-machines having
gangs of needles for quilting several parallel seams. He set
forth these means in the specifications and drawings of his original
patent, and seems to have been well entitled to then have a
153 patent for them and for the combination of the mechanism
with the gang of needles, but he does not appear to have been
entitled to a patent for merely giving such direction to such feed-motion
apart from the mechanism, nor to the process of operation
of his mechanism for giving such direction. McKay *v.* Jackman,
20 Blatchf., 466; 12 Fed. Rep., 615. Neither could he claim the
combination of mechanism not then known, or its processes with the
needles. He invented his own mechanism and the combination of
that with the co-operating parts of the machine, and nothing more,
and seems to have been entitled to a patent for those and no more.
The first reissue was within a few months of the original and before
others appear to have done anything in that region of invention,
and seems to have been well enough. Meyer *v.* Goodyear Man'f'g
Co., 11 Fed. Rep., 891; Hartshorn *v.* Eagle Shade-Roller Co., 18 Fed.
Rep., 90. The second reissue was more than two years after the
original, but, whether too long after or not, was, in effect, for the
combination of the gang of needles and cloth-plate with any
154 feeding mechanism which would reach across the cloth and

feed the long side faster than the other. This was clearly beyond the invention shown in the original, and, except as to the mechanism shown in the original, beyond the invention in every way. This claim of the reissue is, therefore, wholly invalid. Wing *v.* Anthony, 106 U. S., 142 (S. C. 1 Sup. Ct. Rep., 93); James *v.* Campbell, 104 U. S., 356. The new claim of the first reissue brought forward into the second, being valid in the first, is not avoided by the invalid claim of the second. Schillinger *v.* Greenway Co., 24 O. G., 495 (S. C. 17 Fed. Rep., 244); Gage *v.* Herring, 107 U. S., 640 (S. C. 2 Sup. Ct. Rep., 820). The orator appears, therefore, to be entitled to a monopoly of the conical rollers in that combination. It is argued that the defendant's machines invade that monopoly. Those machines have not conical rollers, nor are they claimed to have any of his other mechanism. It is said that there is no invention
155 in dividing the conical rollers into parts, and that the parts are the equivalent of the whole. This is not what the defendant does. The orator's machine gives the circular direction by mechanism that accomplishes the result in one way, the defendant's by different mechanism that accomplishes it in a different way. That claim, therefore, is not infringed.

Let there be a decree dismissing the bill of complaint, with costs.

Edmund Wetmore, for plaintiff.
Gilbert M. Plympton, for defendant.

(Endorsed:) U. S. circuit court. Filed Feb. 8, 1884. Timothy Griffith, clerk.

156 U. S. Circuit Court, Southern District of New York. October Term, 1883. In Equity.

Present: Hoyt H. Wheeler, judge.

LOUIS DREYFOOS *vs.* WILLIAM WIESE.

This suit coming on for final hearing, and upon hearing Edmund Wetmore, Esq., of counsel for complainant, and Gilbert M. Plympton, Esq., of counsel for the defendant, and upon due consideration of the proofs submitted herein—

Now, it is ordered, adjudged, and decreed, as to the first and second claims of reissued letters patent No. 9097, dated February 24th, 1880, that they are valid as to the second claim thereof, but
157 are not infringed by William Wiese, the defendant in the above-entitled suit.

It is further ordered, adjudged, and decreed that said reissued letters patent No. 9097 granted February 24th, 1880, to August Beck and assigned to Louis Dreyfoos, the complainant herein, are invalid as to the first claim thereof.

It is also further ordered, adjudged, and decreed that the bill of complaint in the above-entitled suit be dismissed with costs.

Dated New York, February 8th, 1884.

(Signed) HOYT H. WHEELER.

(Endorsed :) U. S. circuit court, southern dist. of N. Y. Dreyfoos *vs.* Wiese. Decree dismissing bill with costs. Filed in court Feb. 8, 1884.

158 And the costs having been taxed by the clerk at two hundred and seventeen and ten one-hundredth ($217.10) dollars, the process, pleadings, and decrees, together with other papers filed in said cause, are duly annexed hereunto.

Wherefore let the said William Wiese, defendant, recover of said Louis Dryfoos, complainant, as adjudged in said final decree, together with the further sum of two hundred and seventeen and ten one-hundredths ($217.10) dollars, the cost and charges as taxed.

Signed and enrolled this 15th day of September, A. D. 1884.

(S'g'd) TIMOTHY GRIFFITH, *Clerk.*

159 (Endorsed :) United States circuit court, southern district of New York. In equity. Dryfoos *vs.* Wiese. Final record. G. M. Plympton, def't's solicitor. Damages, $— ; costs, $— ; total, $217.10. U. S. circuit court. Oct. 6, 1884. Timothy Griffith, clerk.

160 Circuit Court of the United States, Southern District of New York. In Equity.

LOUIS DRYFOOS *vs.* WILLIAM WIESE.

We hereby consent that the foregoing papers shall constitute the record to be sent to the Supreme Court of the United States by the clerk of this court on the appeal to said Supreme Court in the above-entitled cause, without prejudice to any motion to correct the record hereafter.

New York, Oct. 7th, 1884.

(Signed) WETMORE & JENNER,
Compl't's Sol'rs.
(Signed) G. M. PLYMPTON,
Sol'r, &c., for Def't.

(Endorsed :) U. S. circuit court, S. D. of N. Y. Dryfoos *vs.* Wiese. Stipulation as to record. U. S. circuit court. Filed Oct. —, 1884. Timothy Griffith, clerk.

161 Circuit Court of the United States, Southern District of New York. In Equity.

LOUIS DRYFOOS *vs.* WILLIAM WIESE.

It is hereby stipulated that the exhibits (machines) in evidence in the above suit may, at the time of hearing on appeal, be sent by the clerk of this court to the clerk of the Supreme Court of the United States for use on the hearing on appeal in said Supreme Court.

Dated New York, Oct. 7th, 1884.

(Signed) WETMORE & JENNER,
Compl't's Sol'rs.
G. M. PLYMPTON,
Sol'r, &c., for Def't.

(Endorsed:) U. S. circuit court, S. D. of N. Y. Dryfoos *vs.* Wiese. Stipulation as to exhibits (machines). U. S. circuit court. Filed Oct. —, 1884. Timothy Griffith, clerk.

162 Supreme Court of the United States.

LOUIS DRYFOOS, Complainant and Appellant,
vs.
WILLIAM WIESE, Defendant and Respondent.

Know all men by these presents that we, Jacob Loewenstine and Joseph Dryfoos, are held and firmly bound unto William Wiese, the above-named defendant and respondent, in the sum of five hundred dollars to be paid to the said William Wiese, his executors or administrators; to which payment, well and truly to be made, we bind ourselves and each of us, jointly and severally, and our and each of our heirs, executors, and administrators, firmly by these presents.

163 Sealed with our seals and dated this 11th day of February, 1884.

Whereas the above-named Louis Dryfoos hath taken an appeal (in open court, at the term at which the decree herein was entered) to the Supreme Court of the United States, to revise the decree rendered in the above-entitled action by the circuit court of the United States for the southern district of New York, in equity:

Now, therefore, the condition of this obligation is such that if the above-named Louis Dryfoos shall prosecute his said appeal to effect and answer all costs and damages, if he shall fail to make good his plea, then this obligation shall be void; otherwise to remain in full force and virtue.

(S'g'd) JACOB H. LOEWENSTINE.
(S'g'd) JOSEPH DRYFOOS.

Sealed and delivered in the presence of—
164 (S'g'd) JOHN H. IVES.

UNITED STATES OF AMERICA,
Southern District of New York, } *ss:*

Jacob H. Loewenstine, being duly sworn, deposes and says that he is a resident and freeholder within the city of New York, and worth the sum of one thousand dollars over and above all his just debts and liabilities.

(S'g'd) JACOB H. LOEWENSTINE.

Sworn to before me this 11th day of Feb'y, A. D. 1884.

JOHN H. IVES,
Notary Public, Kings and New York Co's.

165 UNITED STATES OF AMERICA,
Southern District of New York, } *ss:*

Joseph Dryfoos, being duly sworn, deposes and says that he is a resident and freeholder within the city of New York, and worth the sum of one thousand dollars over and above all his just debts and liabilities.

(S'g'd) JOSEPH DRYFOOS.

Sworn to before me this 11 day of Feb'y, 1884.
(S'g'd) WILLIAM I. LETT,
Notary Public for Kings County.

Cer. filed in N. Y.

I approve the above bond and the sufficiency of the sureties thereto and allow the appeal.
(S'g'd) HOYT H. WHEELER.

166 (Endorsed:) Supreme Court of the United States. In equity. Louis Dryfoos, complainant and appellant, *vs.* William Wiese, defendant and respondent. Bond on appeal. Wetmore & Jenner, compl't's sol'rs, 206 B'way, N. Y. city. U. S. circuit court. Filed Feb. 12, 1884. Timothy Griffith, clerk.

167 UNITED STATES OF AMERICA, *Southern District of New York,* } *ss:*

I, Timothy Griffith, clerk of the circuit court of the United States of America for the southern district of New York, in the second circuit, do hereby certify that the foregoing pages, numbered from Nos. one to one hundred and sixty-six, inclusive, contain a true and complete transcript of the record and proceedings had in said court in the case of Louis Dryfoos, complainant and appellant, against William Wiese, defendant and respondent, as the same remain on record and on file in said office.

In testimony whereof I have caused the seal of the said court to be hereunto affixed, at the city of New York, in the southern district of New York, in the second circuit, this — day of October, in the year of our Lord one thousand eight hundred and eighty-four, and of the Independence of the said United States the one hundred and ninth.

[Seal of the Circuit Court, Southern Dist. of N. Y.]

TIMOTHY GRIFFITH, *Clerk.*

Endorsed on cover: S. New York, C. C. U. S. No. 109. Louis Dryfoos, appellant, *vs.* William Wiese. Filed 16th October, 1884.

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U. S. SUPREME COURT.

No. 109.

◆

LOUIS DRYFOOS,
Appellant,
vs.
WILLIAM WIESE,
Appellee.

BRIEF FOR APPELLANT.

EDMUND WETMORE,
Appellant's Counsel.

Burgoyne Quick Printing Co., Cor. Walker & Centre Sts., New York.

Supreme Court of the United States.

Louis Dryfoos,
Complainant and Appellant,

against

William Wiese,
Defendant and Respondent.

BRIEF FOR APPELLANT.

This is an appeal from a decree of the Circuit Court of the United States, for the Southern District of New York, dismissing a Bill of Complaint charging infringement of Reissued Letters Patent, Numbered 9,097, dated February 24th, 1880, granted to the complainant, Louis Dryfoos, as Assignee, by mesne assignment of A. Beck, for an Improvement in Quilting Machines.

The said reissue was a second reissue of original Letters Patent, No. 190,184, dated May 1st, 1877. The first reissue was dated January 29th, 1878, on an application filed January 2d, 1878, and was applied for eight months after the grant of the original patent, the second reissue in suit was applied for January 24th, 1880, two years less five days after the first reissue, and two years and a little less than nine months after the grant of the original.

The only claim necessary to consider is the *second* of the reissue in suit, which is substantially the same as the *first* claim of the first reissue.

The appellant contends that the said claim does not unlawfully expand the original, and that it has been infringed by the defendant: His Honor Judge Wheeler, before whom the final hearing was had in the Court below, held that the said claim was valid, but that it was not infringed.

The errors assigned are that the learned Judge erred :

In that he held that the *second* claim of the reissue was not infringed and that the defendant accomplished the result accomplished by the patent mechanism in a different way and by different mechanism.

Many defenses to the patent were taken in the answer, but no attempt was made to support any of them except two, viz.:

1. The defense of the invalidity of the reissue as not surrendered in compliance with the statute, because of a defective specification arising from inadvertence, and as being for a different invention from the original.
2. The defense of non-infringement.

These are acccordingly the only questions in the case.

I.

The Second Claim of the Reissue in Suit is Valid.

General Description of the Invention.

The patent describes a kind of sewing machine intended for quilting. The part of the invention here in controversy relates to the device for feeding the goods through the machine. When it is desired to feed curved strips of goods through the machine it is necessary that one side of the goods should be fed through faster than the other. Prior to the patent the only way to accomplish this result was by the hand of the operator, who either dragged back or pushed forward one side or the other of the goods as they were fed through the machine, or both simultaneously. This can be done, though not with good results, in a single needle machine, but in the class of multiple needle machines, so called, that is, machines having a gang or row of needles stretching across the goods instead of a single needle, this method of giving to curved goods the necessary twist or circular motion in passing through the machine by hand was awkward, if not impracticable, and produced irregularity in the sewing and appearance of the goods. Beck was the first man to devise a remedy for this by providing an automatic feed which, by feeding one side of the goods faster than the other, could feed curved or conical strips through the machine with the same facility, and produce quilting of the same regularity in such goods as in straight pieces.

The invention was a pioneer invention and one of great value. The Court below said:

"Beck well appears to have meritoriously invented effective " means for giving circular direction to the feed of quilting machines " having gangs of needles for quilting several parallel seams" (Rec., p. 93).

And the following testimony on the part of the complainant was uncontradicted:

"8 Q. Will you please state the differences, if any, between said " quilted goods made on the Beck machine and the quilted goods " made and sold before the introduction of the said Beck quiltings?

" A. Before the introduction of our patented machine there were " very few quilted goods in number sold, for the reason that, to be " made by one single needle, they would be too expensive; and in " case we would have large orders for selling them we could not " execute the orders. The goods which are quilted by one needle " have in most cases to have the patterns stamped upon them, and " the operator has to follow that mark; whereas, on the patented " quilting machine the goods or the bottom of the skirt is cut in the " conical form and passes through the machine, and by that each " and every skirt will come out alike.

" 9 Q. In point of regularity of workmanship, how do the conical " quiltings made upon the Beck machine compare with those made " before the Beck machine?

" A. If quilting is done by a machine with one needle without " the pattern being stamped in advance, it could never be done as " perfect as on the patented machine.

" 10 Q. In point of price, how do the goods made on the Beck " machine compare with those made before that time?

" A. The Beck machine is a saving in labor over 80 per cent. " against the one-needle machine, which was customary before that " machine.

" 11 Q. What, if you know, has been about the number of those " skirts sold in this market since your introduction of them up to " the present time?

" A. I believe the sales of this class of quilting must be over " 100,000 dozen."

THE SPECIFICATION AND CLAIMS OF THE ORIGINAL AND REISSUES.

The original patent was for certain improvements on the quilting machine described and shown in prior letters patent to A. Beck, the same inventor. These prior letters patent were dated February 16th, 1875, No. 159,884, and are printed at page 80, &c., of the record. The feeding rollers in the first machine were straight cylindrical rollers. It contained no provision for quilting circular goods, such as the conical bodies of skirts, or skirt borders. The rollers fed the goods at a uniform speed across their length. They were adjustable so that they could be placed so as to form an angle with the row of needles; but this was simply for the purpose of feeding the cloth obliquely through the machine which was desirable where the user wished to produce regular rows of stitching which would intersect each other to form a diamond shape pattern.

See specification, Rec., p. 80, and drawing opposite page 79. The drawing opposite page 82 does not belong to this patent.

In the Letters Patent No. 190,184, the original, upon which the reissue under consideration was founded, the inventor, among other improvements upon the first machine combined conical rolls with the gang of needles so as to feed goods cut in a conical or circular shape. In the body of the specification the patentee says:

> " The feed rolls are shown at H. They are intended in this in-
> " stance to feed the conical bodies of skirts or skirt borders and are
> " therefore, for this purpose, made conical. The cloth to be sewed
> " passes over the cloth plate I under and back of the lower roll;
> " thence up between the two rolls and to the front of the upper roll
> " over which it finally passes. The rolls are made conical only for
> " the purpose above mentioned. To feed straight goods they are
> " made cylindrical. They do not move with the sewing frame. They
> " have no movement of lateral reciprocation, but revolve in bearings,
> " formed in a stationary frame H " (Specification, Rec., pp. 84, 85).

The drawing clearly showed the conical feed thus described and is identical with the drawing of the present reissue. No claim for the conical rollers either separately or in combination with the needle gang or other parts of the mechanism was made in this patent.

The omission was rectified in the first reissue, which was applied for eight months after the original patent was granted. This reissue, dated January 29th, 1878, is printed at pp. 87 *et seq.*, of the record.

In this first reissue the patentee notes the inconvenience which belonged to the machine shown in his first patent, arising from the fact that:

> " When conical bodies of skirts or skirt borders were to be
> " quilted it was necessary to drag the material through on one side,

"at the same time crowding it back on the other, as is done in "ordinary sewing machines. This, while being easily and readily "effected on such machines, and the material being turned under "and around a single needle, without any inconvenience to the "operator, and without injury to the fabric, or to the parts of the "mechanism which hold the material, cannot be done, in connection "with a gang of needles with a feeding mechanism, holding the "material both intermittingly during the intervals of stitches and "continuously between sets of rollers, without great manual "difficulty to the operator, and without such strain upon the "material and friction upon the feeding mechanism as will endanger "the quality of the work and the operation of the machine."

The specification then proceeds to describe the conical rollers H, intended to feed the conical bodies of skirts or skirt borders in substantially the language already quoted from the original patent. A claim, referring to these rolls, is added as follows :

"1. The combination with a series of vertically-reciprocating "needles, mounted in a laterally-reciprocating sewing frame of "conical feed rolls, acting intermittingly during the intervals of the "formation of stitches, substantially as herein shown and described."

A second reissue was taken out upon an application filed a little less than two years thereafter, being the reissue in suit.

The specification of this reissue is printed at pp. 52 *et seq.* of the Record. It corrected certain parts of the specification not in controversy here. It added a claim in respect to the combination forming the feeding mechanism, and adds the following paragraph to that part of the specification descriptive of the said conical rollers :

"I also have devised for the purpose of feeding conical strips of "goods—such as the conical bodies of skirts or skirt borders—a "feed device operating intermittingly between the formation of the "stitches, which extends throughout the width of the conical strip "of goods, and which, as it departs from the shorter curved edge "and approaches the longer-curved edge of the goods is adapted to "have a proportionally increased range of feed movement, so that "it will feed the conical strip of goods in the requisite curved path "evenly and without any injurious strain or drag.

"The feed device, in which I have embodied this feature of my "invention consists, as shown in the drawings, of feed rolls H, "which are made conical shape" (Rec., p. 54). The rest of the description being substantially the same as in the original and first reissue.

The new claim forming the *first* claim of the second reissue is as follows :

"1. In a machine for quilting conical strips of goods the combi-
" nation with the series or gang of sewing mechanisms and the cloth
" plate which supports the goods under the action of the same, of a
" feed device, operating intermittingly in the intervals between the
" formation of the stitches, which extends and operates substantially
" across or from edge to edge of the conical strip of goods, and which, as
" it departs from the shorter curved edge and approaches the longer
" curved edge of said goods, is adapted to have a proportionately
" increased range of feed movement substantially as and for the
" purpose set forth."

What was the *first* claim of the first reissue is preserved and made the *second* claim of the reissue under consideration without material change of language, viz.:

"2. The combination, with a series of vertically-reciprocating
" needles mounted in a laterally reciprocating sewing-frame, of coni-
" cal feed rolls and mechanism for causing them to act intermit-
" tingly during the intervals between the formation of stitches, sub-
" stantially as herein shown and described" (Rec., p. 56).

It is only necessary to consider the last quoted claim. If the one before it, first introduced in the present reissue, is broader than this it is an unlawful expansion introduced nearly three years after the original, so that if the defendant has not infringed the *second* claim he has infringed no lawful claim of the reissue in suit.

So far as appears by the testimony no public rights, either by the issuing of other patents or the use of the invention, intervened prior to the first appearance of this claim in the first reissue, and its validity was sustained by the Court below, that part of the opinion being as follows:

"The first reissue was within a few months of the original and
" before others appear to have done anything in that region of in-
" vention, and seems to have been well enough. *Meyer vs. Goodyear*
" *Mfg. Co.*, 11 Fed. Rep., 891; *Hartshorn vs. Eagle Shade Roller*
" *Co.*, 18 Fed. Rep., 90." * * *

"The new claim of the first reissue brought forward into the
" second, being valid in the first, is not avoided by the invalid claim
" of the second. *Schillinger vs. Greenway Co.*, 24 O. G., 495; S. C.,
" 17 Fed. Rep., 244. *Gage vs. Herring*, 107 U. S., 640 (S. C., 2
" Supreme Court Reporter, 820). The orator appears, therefore, to
" be entitled to a monopoly of the conical rollers in that combina-
" tion."

This part of the decision below was correct.

A claim may be lawfully added by reissue, provided it is justified by the original specification and is applied for with due diligence.

Battin vs. Taggart, 17 How., 83.
Morey vs. Lockwood, 8 Wall., 230.
Seymour vs. Osborne, 11 Wall., 516.
Mahn vs. Harwood, 112 U. S., 354.

In the last case it is said that " since the purpose of the statute " undoubtedly was to provide that kind of relief which courts of " equity have always given in cases of clear accident and mistake in " the drawing up of written instruments, it may fairly be inferred " that a mistake in a patent whereby the claim is made too narrow " is within the equity if not within the words of the statute " (p. 362).

In the present instance the language already quoted from the original specification, which is substantially preserved in the reissue, aided by the original drawings which are the same as those of the reissue, clearly show that the claim under consideration might have been made in the original patent.

The combination which it sets forth was described in the original in the precise form in which it is described in the reissue. The latter adds matter explanatory of its object and mode of operation, but this matter, while it renders the description clearer, does not enlarge the subject matter to which it relates.

Nor was the reissue in which this claim first appeared applied for too late under the doctrine of *Miller vs. Bridgeport Brass Co.* (104 U. S., 350) and kindred cases.

Where the lapse of time between the grant of the original patent and the application for the reissue is so great that it appears to the Court to amount, *prima facie*, to unreasonable delay, the Commissioner will be held to have exceeded his jurisdiction unless the delay is satisfactorily accounted for and public rights have not intervened. No invariable rule can be laid down as to what is reasonable time, but by analogy to the law of public use before the application for a patent a delay of two years in applying for an expanded reissue is one requiring an excuse therefor to be " made manifest by the special " circumstances of the case."

Mahn vs. Harwood, *ubi sup.*, 112 U. S., 363.
Miller vs. Bridgeport Brass Co., 104 U. S., 350.

It would seem to be a just inference from these cases that, where the delay is much less than two years, and there is no evidence showing absence of inadvertence or mistake or of any other jurisdictional fact, and the reissue is one which, on the face of the original and reissue, may be lawfully made, the action of the Commissioner will not be held an unlawful exercise of his authority and the reissue will be sustained.

In this case the delay was only eight months; there is no evidence necessarily implying an absence of inadvertence or mistake (as *e. g.* in *Leggett vs. Avery*, 101 U. S., 256, 259; noted in 112 U. S., 359); the reissue was not made to cover inventions or machines made or used between the date of the original and reissue, or to include anything done or suggested by others than the inventor, or to encroach upon any ground occupied by the public since the first grant of the patent, and does not, therefore, appear to have been issued without authority.

It is true that the record does not show the evidence of inadvertence, or the excuse for delay which was offered to the Commissioner, but if the foregoing propositions are true, that is not necessary, unless the record negatives the existence of inadvertence and the lapse of time is, on its face, so unreasonable as to require satisfactory explanation in order to justify the Commissioner's action. "The settled rule of decision is that if it appears, in cases where "the claim is merely expanded, that the delay has been for two "years, or more, it is adjudged to invalidate the reissue, unless the "delay is accounted for and excused by special circumstances, which "show it to have been not unreasonable."

Wollensak vs. Reiher, 115 U. S., 101.

THE SECOND CLAIM OF THE REISSUE IN SUIT HAS BEEN INFRINGED BY THE DEFENDANT.

Infringement is charged against two kinds of machines used by the defendant, called:

1. The roller feed machine, and
2. The four motion feed machine.

These machines were inspected and described by Mr. Renwick, and illustrated by models marked respectively, "Complainant's Exhibit Illustrative Model Defendant's Roller Feed Machine" (Rec., p. 38), and "Complainant's Exhibit Illustrative Model Four Motion

Feed" (Rec., pp. 40, 158 ; Test. Renwick, Rec., p. 27, Q. 5 & Ans. to 7 Q., & Ans., p. 31 & p. 38, 1 Q., & p. 40, 6 Q.).

The following description of these machines by Mr. Renwick may be readily followed, aided by reference to the above models, which are not intended to be complete working models, but to show the working of the machines so far as is pertinent to the present controversy.

As to the roller-feed machine Mr. Renwick says :

> " This class of machines had a gang of needles and a long presser
> " foot serving for all the needles in the gang, and operating like the
> " ordinary presser foot of a sewing machine, except that it was lifted
> " from the cloth to be quilted while the needles were out of the
> " cloth. This gang of needles had a motion in the direction of the
> " gang, sometimes called the shogging motion, so that the machine
> " could quilt scollops or wavy patterns in the cloth. The needles
> " and presser foot also had a swinging motion in the direction of the
> " feed of the cloth, as in ordinary needle-feed machines. This motion
> " was imparted to the needles and presser foot by cams, in such
> " manner that one end of the gang could move through a greater
> " distance than the other end of the gang ; the gang thus accommodating
> " itself to comparatively long stitches on one side of the cloth
> " and comparatively short stitches on the other side of the cloth.
>
> " These machines had a roller-feed apparatus, the cloth being
> " grasped between two sets of rollers, and the two sets of rollers being
> " pressed together by means of springs. These rollers extended
> " all across the width of the goods, but not continuously ; there being
> " three smooth rollers on the pressing shaft, with intervals between
> " them, and six rollers with intervals between them on the shaft to
> " which the motion is imparted to feed the goods. On this last
> " shaft three of the rollers were rough and three were smooth. One
> " of the rough rollers was $3\frac{1}{4}$ inches long, and it was located at one
> " edge of the goods which were to be quilted. The other two rough
> " rollers covered a space of $3\frac{1}{2}$ inches in length, and grasped the
> " goods at the other side or edge thereof. The smooth rollers were
> " located between the two rough rollers at one side, and the other
> " rough roller at the other side of the goods. The rollers on this
> " shaft were moved by pawls and ratchet wheels, through the intervention
> " of change gear, and the shaft on which the rollers were
> " supported was cut in two, the long rough roller serving as a sleeve
> " to keep the two parts of the shaft in line. This feeding shaft was
> " therefore, in fact, two shafts, having the same axis, and the construction
> " of the actuating apparatus was such that the long rough
> " roller made more revolutions in any given time than the two short
> " rough rollers which acted on the other side of the goods. The revolution
> " of these rollers was practically, though not absolutely, continuous,
> " and it was possible for them to move in this practically
> " continuous manner on account of the needles swinging with the

"goods, as before described. In consequence of the long rough
" roller moving faster than the short rough rollers the goods to be
" quilted were fed in curved lines, in the manner described in reissue
" No. 9097, and the feed, although practically continuous, acted in-
" termittently between the formation of the stitches, the feed carry-
" ing the goods along after the needles got out of the cloth and until
" the needles, after having swung backward or in the direction
" of the reverse of the feed, entered the cloth again to
" make another set of stitches. These machines were not in use
" when I visited the factories, and at my request Mr. Wiese put a
" belt on one of them, so that I might see it in operation."

Rec., p. 27, 5 Q.

And see illustrative model of said machine before mentioned. Complainant's Exhibit Illustrative Model Defendant's Roller Feed Machine (Rec., p. 38).

As to the defendant's four motion, or drop machine, Mr. Renwick testifies:

" The other machines seen by me were drop feed machines.
" There were five of them. Each of these machines had a gang of
" needles with a presser foot, and the needles had a shogging mo-
" tion, as described in reissue No. 9097; but this gang of nee-
" dles had no swinging motion such as I have described in the first
" of the machines referred to in the first part of this answer. The
" feed motion of these machines was composed of four rough
" surface four-motion feeds, acting in connection with a presser
" roller above the cloth instead of with an ordinary presser foot.
" Two of the feeds acted close upon the edges of the cloth, and two
" or three on parts of the cloth between the edges. All four of
" the feed bars were attached to a long rock shaft or rod greater in
" length than the width of the goods to be quilted, and they derived
" their motion to feed the goods from this rock shaft, while their up
" and down motion to seize and let go of the goods are derived
" from cams which underlie the feed bar, as usual in sewing ma-
" chines. This long rock shaft was mounted at each end, outside
" of the outside feed bars, in the ends of two nearly upright levers,
" the end of the shaft entering loosely into holes in the lever.
" Those levers were supported on pivots which could be moved up
" and down vertically, the pivots entering slots in the levers and
" the whole construction being such that the two ends of each
" lever, measuring from the pivot, could be made of greater or
" less length in proportion to each other. The lower ends of each of
" these levers were acted on by cams, and in consequence of the
" revolutions of the cams the shaft or rod to which the feed bars
" were attached, and consequently the feed bars were moved back-
" ward and forward. The distance to which the feed bars could
" be moved backward and forward so as to regulate the length of

"stitches, could be altered by moving the pivots before spoken of "up and down in the slots of the lever, and on account of the "extreme looseness of the rods to which the feed bars were attached "in the holes at the top of the levers, the pivots could be adjusted "to different heights in the levers and the contrivance still operate.

"When so adjusted, the rough surface at one edge of the goods "moved through a greater distance than the rough surface at the "other end of the goods, and the two or three intermediate rough "surfaces also move through different distances, at each motion "to feed the cloth, and, in consequence, would feed goods to be "quilted in curved lines, in the same manner as described in re-"issue No. 9,097.

"When I saw these machines they were not in use,and I had "one of them started up so that I could inspect it Mr. "Wiese said when I saw these machines the pivots were so "adjusted that all four or five of the feed surfaces moved through "the same distances at each stitch, and, consequently, that the "goods to be quilted would be fed in straight, and not in curved "lines, unless twisted by the hands of the operators, and he said that "he intended so to use the machines, although they had the capacity, "by proper adjustment, of feeding the goods in curved lines, and were "evidently constructed for the express purpose of being used "so as to feed the goods in either curved or straight lines, as might "be desired" (Rec. pp. 28, 29 ; m., p. 50, 51).

As to these machines containing the invention described in the patent and referred to in the *2nd* claim thereof, Mr. Renwick testified as follows :

"In my opinion both classes of machines contain the inventions "described in the second claims of reissue 9,097. Both classes of "machines have gangs of needles which have a shogging, or, as it is "called in the claim, a lateral motion, and both have a cloth plate "which support the goods under the action of the needles.

"So far as I know, Mr. Beck, on whose invention reissue 9097 is "based, was the first to combine with a gang of needles a feed ap-"paratus which would feed the goods in curved lines, and one ele-"ment of the 2d claim of the reissue is the conical feed rollers which "cause this peculiar feed ; and the claims, as I understand them, "cover the known substitutes and equivalents of this feed. Long "prior to the date of Beck's original patent a feed apparatus con-"sisting of a roughened roller was used in the well-known original "Singer machine, as also was the so-called four-motion rough sur-"face feed, such as was used in the original Wheeler & Wilson and "Grover & Baker sewing machines. Now, the peculiarity of the "Beck invention consists in moving the feeding surface through a "greater distance for every stitch at one side of the goods than at "the other side or edge thereof, it being evident that the surface of

" a conical roller, or to speak more accurately, of a conical frustum, " moves when the frustum is revolved through a greater distance at " the large end of the frustum than at the small end thereof. In " consequence of these different lengths of movement at the two " ends of the frustum the goods are moved through a greater distance at one edge than at the other edge, and consequently the " feed of the whole cloth or goods is in curved lines.

" In the first class of machines seen by me under the inspection " of Mr. Wiese, the surface of the rough feed rolls at one edge of the " goods moved faster than the surface of the rough roller at the " other edge of the goods, not because the rollers were of different " diameters, but because the surface of one roller was moved at a " greater speed than the surface of the other roller, and the feed by " means of these rollers was in operation when the needles were out " of the cloth. In my opinion this contrivance in the Wiese machine is precisely the same as the conical roller in reissue 9097. " Although I consider the feeds of the first class of the Wiese machines substantially the same as that described in reissue 9097, it " is nevertheless an inferior feed, and will not perform the duty required of it with such exactitude as the conical rollers of reissue " 9097.

" The second class of the Wiese machine, when adjusted so that " the feeding surfaces moved each to a greater distance than the " other, commencing at one edge of the cloth and ending at the " other edge thereof, have precisely the same mode of operation as " the conical feed roller of reissue 9097, but in them the rotary motion of a conical roller is transferred into the rectilinear motion of " the feeding surfaces. These two directions of motion of roughened " feeding surfaces were well known, as before stated, prior to Beck's " invention, and therefore I consider the roughened surface of the " Wiese machine as a mere substitute for the roughened surface of " reissue 9097. Even if these two modes of moving the roughened " surfaces were not well known substitutes for each other I should " be of the same opinion, because in both cases the cloth is fed by " the motion of those surfaces, and to a distance depending upon " the extent of motion of the surfaces, and so far as the mere advancing of the cloth is concerned it is immaterial whether " the surfaces move in arcs of circles or in straight " lines. I am aware that the conical rolls in reissue " 9097 grasp the cloth to feed it over the whole width of the cloth, " while in both classes of Wiese machines the feeding devices only " act upon portions of the cloth. I do not think that any person " could escape the Beck patent, reissue 9097, by cutting gaps at " intervals in his conical rollers, and I therefore treat the feeds of " Wiese as if they acted over the whole width of the cloth to be " quilted.

" Further: in giving this answer I have not lost sight of the fact " that in the first class of Wiese machines the feed is operative, not " only when the needles are out of the cloth, but also when they are

" in the cloth ; but this latter feeding motion is necessary, because " the needles swing when in the cloth. As, however, the roller feed " of Wiese acts while the needles are out of the cloth, and this " action of the feed is intermittent, it appears to me that the opera- " tion of the feeding rollers in this Wiese machine is, in the words " of the claim of reissue 9097, and not only in words, but also in " the substance of the claims of the same reissue, a feeding device " ' operating intermittently in the intervals between the formation " of stitches ' " (Rec., pp. 30–31).

The differences relied upon to escape infringement are the following :

I. As to the Roller Machine.

1st. The feed rollers not only feed while the needles are out of the cloth, but continue their stroke while the needles are in the cloth, to keep up with the needles which have a swinging motion.

The only effect of this is to make a little longer stitch, it does not affect the essential features of the combination. It is a fact proved by Mr. Renwick's testimony, and not directly denied by any one, and indeed a fact obvious on inspection, that the gang of needles in the defendant's machine is substantially the same element as respects the combination which is the subject of controversy as the gang of needles in the Beck machine.

To fulfill that office it is only necessary that it should be a *gang* of needles, and not a single needle ; that it should have a *vertical* motion, and also a *lateral* or " shogging " motion. If it has all these, it has everything that the patent requires. Whether or not it has *in addition* a motion on its own axis so as to swing the needles is wholly immaterial. The presence of such additional motion in no respect deprives it of any of the before-mentioned essential features, or in any respect affects or alters those features.

Now, the swinging of the needle bar makes it necessary that the cloth should move while the needles are in it, whereas, if the needle bar has no motion on its own axis, it is impossible for the cloth to move while the needles are in it.

In the precise form of needle-bar shown in the patent, therefore, it is impossible for the cloth to move, and consequently for the rollers to feed while the needles are in the cloth ; whereas in the defendants' machine, with the swinging needle-bar the cloth must move while the needles are in it, and it is consequently possible for the rollers to move at the same time. But this motion of the rollers is merely something additional to the function of feeding, while the needles are out of the cloth, which latter function they still retain, and which is the only function they are required to have, in order to fulfill the essential conditions of the patented combination in regard to the time of feeding.

The fact that they have this additional motion in no respect alters, affects, or dispenses with their necessary function of feeding while the needle is out of the cloth.

In one sense, and literally they do not feed intermittently; that is, they do not feed with alternate periods of rest, but in another sense they do feed intermittently, that is, they feed during the interval while the needles are out of the cloth.

Whether they also move or feed while the needles are in the cloth is immaterial, because it in no way affects the operation of the combination, but is an addition thereto, which leaves the combination unaltered.

This point is well stated by Mr. Renwick as follows:

> "The patent has this statement in it: 'They (the rollers) act in-
> " termittently, resting during the formation of the stitch, and feed-
> " ing the goods when the needles are out of the cloth.' Now, the
> " feed acts when the needles are out of the cloth in both machines,
> " and the purpose of the feed in both machines is to draw the cloth
> " along, when the needles are out of it, and the intermittent action
> " spoken of in the patent, is, as I understand it, defined as an action
> " when the needles are out of the cloth.
>
> " Therefore the feed rollers of the Wiese machine operate in the
> " same way as those of Beck's, and at the same time, although the
> " former have in addition to this motion a motion when the needles
> " are in the cloth, this latter motion being rendered possible by the
> " swinging of the needles" (Rec., p. 35, 29 x-Q.).

In other words, the mere feature of resting while the needles are in the cloth, is an incidental feature to the particular form of needle bar shown in Beck's patent, but is no part of the essence of the invention. Describing the best form of his invention known to him, he showed a needle bar, having the vertical and shogging motions only, but not swinging on its own axis, and as a consequence, the feed used with such needle bar must be stationary during the formation of the stitches and while the needles are in the cloth. The defendant making a variation (but no improvement) used a needle bar having the same vertical and shogging motion, but having in addition, a swinging motion upon its own axis, and, therefore, the feed must be in motion while the needles are in the cloth. But in both the feeding mechanism acting intermittingly during the intervals between the formation of stitches, performs its true feeding functions only during those intervals. During the formation of the stitches it merely accommodates itself to the motion of the needles. If the needles move up and down in a straight line, it is stationary; if the needles swing, it must move enough to accommodate the cloth to their motion, but then the needles become the primary feeding mechanism, and the feeding mechanism proper merely keeps pace with them so as to accommodate the motion of the cloth to the swing of the needles. The needles alone would be sufficient to feed the cloth during the formation of the stitch, and ordinary sewing machines using the swinging needle bar, which was an old device, were known as "needle feed" machines (Rec. p. 28).

Looking at the gist of the mechanical principle of the patented combination, it is accurate to say that the defendant's rollers act intermittingly, because it is only during the intervals when the needle is out of the cloth that they act as sole feeders as in the patented machine, and whether they move or stand still, when not acting as sole feeders, is not material. The motion of the defendant's rollers during the formation of the stitch is rather matter of adjustment than construction. If used without the swinging needle-bar they might have intervals of rest, because they are moved by two sets of pawls and it would only be necessary in order to produce this effect to lift one of the pawls out of engagement (Rec., p. 37. 14 X Q.)

As the swinging needle-bar was an old form, merely to substitute that form of bar and adjust the rollers to accommodate themselves to its motion during the formation of the stitch would not seem to be an inventive change (Rec., p.28).

2d. In the defendant's roller machine the rollers are cut away so that they do not operate upon every portion of the cloth, across its entire width, as do the conical rollers of the patent.

They extend far enough over each end to feed the strip through evenly, and their operation extends across the whole width; that is to say, the centre of the cloth is as much fed through by the rollers as its edges, but the rollers themselves do not extend continuously to the middle.

The change is, therefore, immaterial. Mr. Renwick is right when he says: "I do not think that any person could escape the Beck "patent reissue 9097, by cutting gaps at intervals in his conical 'rollers" (Rec., p. 31).

If the rollers seize the cloth over enough of its width to move the whole strip evenly throughout, that is all that is necessary.

In that way they operate, in the language of the first claim, " substantially across, or from edge to edge of the conical strip of " goods," and substantially as the conical rollers shown in the patent operate.

The essential thing is, that the feed should operate at each edge and far enough from the edges to move the whole strip evenly, and simply to cut away such intermediate portions of the rollers as may be removed without interfering with the feeding operation across the whole width, is plainly to make a change of form, but not of substance.

3d. In the defendant's machine the rollers are straight instead of conical.

But the defendant's rollers are made to move faster at one end than the other, and, thus perform the same function as that performed by the conical shape of the patented rollers, and by an equivalent mode of operation.

Mr. Renwick's testimony as to the substantial identity of the two devices (Rec., p. 30) has already been quoted, and is not contradicted by defendant's expert.

The gist of the device is the differential feed, whereby the rollers feed a greater distance, in the same time, at one edge of the cloth than at the other. This is accomplished by keeping a greater extent of the rollers' feeding surface in contact with the cloth during the feeding interval, at the edge intended to be moved the faster, and whether this result is obtained by maintaining a uniform speed at both ends of the rollers, but enlarging the surface at one end, or by preserving a uniform diameter at both ends and increasing the speed at one, is immaterial. In each case the result is obtained in substantially the same way by means which are clearly the equivalents of each other.

II.

The Four-Motion Feed Machine.

The differences relied upon to distinguish this machine are, in substance, only two: *First,* that it has no conical rollers; and, *second*, the allegation that it has not the capacity of feeding faster at one edge than at the other.

1st. As to the four-motion or drop-feed, as a substitute for the conical rollers, Mr. Renwick, as already quoted, testified, without contradiction, as follows:

> "Long prior to the date of Beck's original patent, a feed apparatus, consisting of a roughened roller, was used in the well-known original Singer machine, as also was the so-called four-motion rough surface feed, such as was used in the original Wheeler & Wilson and Grover & Baker sewing machines.
>
> * * * * * * * *
>
> "The second class of the Wiese machine, when adjusted so that the feeding surfaces moved each to a greater distance than the other, commencing at one edge of the cloth and ending at the other edge thereof, have precisely the same mode of operation as the conical feed roller of reissue 9097, but in them the rotary motion of a conical roller is transferred into the rectilinear motion of the feeding surfaces.
>
> "These two directions of motion of roughened feeding surfaces were well known, as before stated, prior to Beck's invention, and, therefore, I consider the roughened surface of the Wiese machine as a mere substitute for the roughened surfaces of reissue 9097. Even if these two modes of moving the roughened surfaces were not well known substitutes for each other, I should be of the same opinion, because in both cases the cloth is fed by the motion of these surfaces, and to a distance depending upon the extent of motion of the surfaces, and, so far as the mere advancing of the cloth is concerned, it is immaterial whether the surfaces move in arcs of circles or in straight lines" (Rec., pp. 30, 31, m. p. 53).

The substitution of the four-motion or drop feed adjusted to feed faster at one end than the other, instead of a conical roller feed, is the substitution of manifest equivalents, and the fact that the four-motion feeds do not touch the goods at every point across their width from edge to edge, is, for the reasons already stated in discussing the same difference with reference to the defendant's roller machine, immaterial.

2d. As to the allegation that the defendant's four-motion feed machines do not, as matter of fact, feed faster, or have no capacity for adjustment for feeding faster on one side than on the other, it is demonstrable that Mr. Elliot, the defendant's expert, is wholly mistaken in his opinion.

Let it be in the first place noted that for the purposes of the invention, the required increment of feed on one side over the other, *for each stitch* is so minute as to be scarcely measurable.

Mr. Renwick shows that it averages only one-eightieth of an inch for each stitch.

Mr. Renwick arrived at this one-eightieth of an inch by taking the average of the waves of quilting.

The length of the waves on the convex edge of the strip being on an average $\frac{4}{16}$ more than the waves on the concave edge, and there being twenty stitches in each wave, this would make an average increase of $\frac{1}{80}$ for each stitch. Mr. Elliot thinks the difference in length of the waves varies from $\frac{1}{16}$ to $\frac{3}{8}$ of an inch, which would correspond to an increment of speed for each stitch, varying from $\frac{1}{320}$ to $\frac{3}{160}$ of an inch, or an average of $\frac{1}{80}$ of an inch as stated by Mr. Renwick. Taking the extreme limit of variation, viz., $\frac{3}{160}$ of an inch, it is clear that it is so minute as to be undistinguishable by the eye and only distinguishable by mathematical measurements (Rec., p. 39, Q. 4).

In the defendants' four-motion feed machine the feeds are firmly fixed along the length of the shaft. The ends of this shaft, it will be seen by reference to the model, rest with a very slight degree of looseness in two upright levers, it being necessary that the shaft should turn slightly on its own axis to give the requisite amount of horizontal motion to the feeds, it must have some slight play in the journal in which it rests.

The length of the throw of the feed is regulated by a nut and screw on each side, working in a slot in the upright levers by means of which the levers are allowed a greater or less range of motion and consequently give a correspondingly greater or less range of motion to the feed shaft. The lower down in the slot the nut is fixed the longer the feed, the higher its position the shorter the feed. If the nut on one side is fixed lower than on the other, of course one side will feed faster than the other (Rec., pp. 28, 29 ; M., p. 50, 51).

The four-motion feed makes one stitch at every throw ; consequently, to give it the requisite increase of speed, it is only necessary that the nut on one side of the feed shaft should have a throw of an average of $\frac{1}{80}$ or, at the utmost, no more than $\frac{3}{160}$ of an inch more than the other. To obtain this result it is therefore only necessary that the nut on one side should be lowered a hair's breadth more than the other, and the working of the machine will not be perceptibly changed.

Mr. Elliot thinks that this could not be done, because as the feeds are fast to the shaft, and one end of the shaft moves faster than the other, the feeds are necessarily given a slight side-ways curvilinear motion, and this Mr. Elliot thinks would make them jam in the slots.

The answer to this is that the change of position in the parts caused by the minute change in position of the feed-shaft requisite to give the required increase of motion on one side, is so infinitely small that it is practically impossible to make the parts fit so closely as not to give room for the motion. It may be safely stated that a four-motion feed for practical use could not be made so that it could rise and fall in and out of its slot and yet fit so closely to the slot as not to leave room for the infinitesimally small play above mentioned.

Mr. Renwick testifies on this point as follows:

After showing, as already explained, that the necessary increment of feed on one side from the other averages only 1-80th of an inch, he proceeds:

> " Now, if the machine was so adjusted as to feed 1-80th of an " inch faster at one edge than at the other the rod or shaft to which " the feed dogs are attached would move at one end 1-80th of an " inch further than the other, and the end nearest the shortest moving " feed might be prolonged and fastened to a vertical pivot and " would turn on that pivot as it was moved by the two cams, just in " the same way as if that pivot was not there because the shaft, moving " at one end faster than the other, moves as a radius moves " when describing a circle. I find by calculation that this radius " would be six feet long from the fastest-moving feed dog to the " centre on which the radius turned, which would describe a circle " of 12 feet in diameter. Now, if the machine were constructed with " mathematical accuracy and without play, which it is not (and if it " were constructed with mathematical accuracy there would be " greater chance of binding or jamming of the dogs), the outer " feed dog, which is the one which it is supposed would jam, and " which would certainly be the most likely to jam, moves through " only 1-16th plus 1-80th of an inch in an arc of a circle which is " twelve feet in diameter, and it is clear that such a short arc of such " a large circle would be so near a straight line that no ordinary " work in a sewing machine would make the feed-dog jam " (Rec., p. 39, M., p. 68).

The feed-dog or feed-bar, it will be noted, is the small slab forming a square of roughened surface moved from beneath and forming the actual feed, which comes in contact with the cloth.

Wiese himself admitted that the machine had the capacity of feeding faster upon one side than the other.

Mr. Renwick's testimony on this point is as follows :

" When I saw these machines they were not in use, and I had
" one of them started up so that I could inspect it. Mr. Wiese said,
" when I saw these machines, the pivots were so adjusted that all
" four or all five of the feed surfaces moved through the same distance
" at each stitch ; and consequently that the goods to be quilted
" would be fed in straight and not in curved lines, unless twisted by
" the hands of the operators, and he said that he intended to so use
" the machines, although they had the capacity, by proper adjustment,
" of feeding the goods in curved lines, and were evidently constructed
" for the express purpose of being used so as to feed the
" goods in either curved or straight lines, as might be desired. * * *

* * * * * * * * *

" 32 x-Q. Wherein did you discover that this four-motion feed
" machine operated practically the same as the Beck machine
" described in the reissue in question ?

" A. I discovered it from the statement of Mr. Wiese himself, that
" the machine could be so operated as to feed one edge of the goods
" faster than the other, thus having the same mode of operation as
" the Beck machine ; and I have stated already in my direct examination
" that four-motion feeds and roller feeds were known substitutes
" for each other prior to the date of the Beck invention.

" 33 x-Q. From this statement made by Mr. Wiese, that his four-motion
" feed machine could be adjusted to feed faster at one edge
" of the goods than the other, were you led to make your statements
" in the direct, referring to that machine ?

" A. Yes ; and also from an examination of the machine myself
" and its adjustment, which proved that it could be so adjusted, and
" was constructed for the express purpose of being so adjusted."

Rec., p. 29, m. p. 51 ; p. 35, 32 x-Q.

After this testimony Mr. Wiese was recalled, and testified that he did not know whether the machine would feed faster upon one side than the other or not, but contradicted himself so conspicuously on cross-examination that his evidence justifies the conclusion that he is perfectly aware of the contrary (Rec., p. 58, Int. 14, p. 60 ; Int. 26 to 28 ; p. 32, Cross.Int. 50 to 53). He only states that he has not actually used it with this adjustment.

This, however, is immaterial. Whether the machine has or has not the capacity to feed straight, if by its construction it is capable of adjustment so as to feed faster on the one side than on the other, at the will of the operator, it is an infringement, whether or not it has been so used in that adjustment.

Holbrook vs. Small, 10 O. G., 508.
The Yale Lock, &c., Co. vs. The Norwich N. Bank, 19 Bl., 123 ; 6 Fed. R., 377.

As matter of fact it is highly improbable that the defendants' machine has ever been used except when so adjusted as to feed faster on one side than on the other. As already shown, it might be so adjusted and the increased length of throw for each stitch not be perceptible to the eye.

It is alleged that the twist is given to the goods by hand, but to accomplish this such twist must be given between the intervals of the stitches when the needles are out of the cloth, because there being a gang of needles the cloth cannot be twisted as it can be in a single needle machine, where it can be turned around the needle as a pivot, while the latter is in the cloth. But to give such minute increments of feed by hand in the interval between two stitches would be impracticable, because the hand cannot act in such minute movements with the precision of machinery.

If the cloth was twisted too much while the needles were out of the cloth it would at once move the threads so far that the shuttle could not be thrown into the loop to form the stitch, or the formation of the stitch would be otherwise disarranged.

The probability is that the operators always adjust the machines so as to extend the throw on one side, whether the proprietor knows of this adjustment or not.

The defendants' witnesses criticised the models used by Mr. Renwick to illustrate his description of defendants' machines "Complt's. Exhibit Illustrative Model Four-motion Feed" (Complt's. Pr., fol. 158), and Complt's. Exhibit Illustrative Model, Defendants' Roller Feed Machine" (Complt's. Pr., fol. 167), because they are not working machines and do not in all particulars correspond to the defendants's machines. It is not necessary that they should do so. They are used for purposes of illustration only—they accurately show the operation of the defendants' machines, so far as relates to the combination of devices recited in the claims in controversy. The question to be determined is whether the defendants' machines infringe, and Mr. Renwick's description, aided by the models, is sufficient for a clear understanding of what these machines are and how they work. This is all that the models are required for, and this purpose they fully and properly serve.

The appellant, therefore, submits that upon the whole evidence both the defendant's roller feed machine and the four-motion feed machine infringe the *second* claim of the reissue in suit. They do not accomplish the same thing in a different way, but in substantially the same way. Beck's machine being a pioneer of its class. He having first devised the combination, the gist of which is a feed feeding faster at one end and than at the other, with the laterally moving needlegang and the intermittent feed when the needles are out of the stitches, variations in the mere form of feed are not material. The principle applies which is thus expressed in *Consolidated Valve Co. vs. Crosby Valve Co.:*

> " Where the ideas necessary to success are made known, and a " structure embodying those ideas is given to the world, it is easy " for the skillful mechanic to vary the form by mechanism which is " equivalent, and is, therefore, in a case of this kind, an infringe-" ment" (113 U. S., 157-179).

In view of the state of the art at the date of Beck's invention, and of the uncontradicted testimony of Mr. Renwick as to the equivalence of the defendant's and the patented devices, the mere substitution of a double roller feed moving faster at one end than the other, or of a series of ordinary four motion feeds having a longer throw at one end than the other, for a single conical feed roller, is just what the passage quoted refers to, viz., a variation of "form by mechanism which is equivalent." It is a variation which is the work of the mechanic—not of the inventor. Beck made known "the ideas necessary to success," by showing the combination of the feed feeding faster at one end than the other in combination with the vibratory needle gang. He gave to the world "a structure embodying those ideas" in a machine in which, as the law prescribes, he showed his invention in the best and simplest form known to him, *i. e.*, a pair of single conical rolls in combination with the needle gang. Any skillful mechanic could vary that form and yet preserve the mode of operation. Every sewing machine maker knew that you could substitute a flat or four motion feed for a roller feed, and that to give the flat feed a longer throw at one end than the other was the same thing as to give the roller feed a larger diameter at one end than the other.

The learned Court below construed the invention too narrowly; its gist does not lie in feeding faster at one end by means of conical rollers, as distinguished from feeding faster by means of a four-motion feed. If it had been old to feed faster at one end than the other for the purpose of quilting conical pieces and Beck had simply invented a new kind of roller feed for accomplishing that result, such would have been the scope of his invention. But Beck invented more than this. He was the first man to embody the idea of the feed feeding faster at one end than the other in combination with the vibratory needle gang, and he is entitled to cover the mere substitution, for his form of feed of other old forms modified so as to have the necessary increment of motion at one end by the exercise of such skill only as any good mechanic could supply. The infringement is like that in the cases brought upon the patent for the Bacheldor feed, which, though decided long ago were decided on principles that are still recognized and enforced.

Potter vs. Braunsdorf, (7 Bl., 97).

It is to be noted as corroborative of the above view that the changes in the defendant's machine are not improvements. They simply are changes for the sake of change, and therefore suggest that they were resorted to merely to evade infringement.

Dederick vs. Cassel (9 Fed. R., 306).

And also, that the identity of result in the operation of the patented and the defendant's machine, creates in such a case as this, a presumption of infringement.

Winans vs. Denmead, 15 How., 330.
Mason vs. Graham, 23 Wall, 261, 274.
Ives vs. Hamilton, 92 U. S., 426.
Marsh vs. Seymour, 97 U. S., 348, 359.
Cross vs. McKinnon, 11 Fed. R., 601.
Putnam vs. Van Hofe, 6 Fed. R., 897.

A point was made in the Court below that as the machines were owned and operated by a company under the name of The Union Machine Perforating Company, the defendant was not personally liable. The point was not there sustained and is not the subject of exception here. However limited the defendant's liability for damages, the complainant is clearly entitled to relief against him by injunction. The defendant was one of several doing business at the factory where the machines were, who formed the corporation above mentioned (Rec., pp. 21, 22); he is a trustee and stockholder of the corporation (Rec., pp. 21, 22). Jointly with one Koch he designed the machines and superintended their construction, and is engaged as a machinist for the company and superintends the running of the machines (Rec., pp. 21, 22 & p. 60 ; x-Q. 35, 36).

Under these circumstances, defendant is clearly personally liable. As a stockholder he enjoys the profits of the infringement ; as a trustee he directs it ; as a machinist he personally takes part therein.

Steiger vs. Heidelberger, 4 Fed. R., 455.
St Louis Stamping Co. vs. Quimby, 18 O. G., 571.

The decree should be reversed and the Court below directed to enter a decree in favor of the appellant for the infringement of the *second* claim.

Edmund Wetmore,
Appellant's Counsel.